The Builder.

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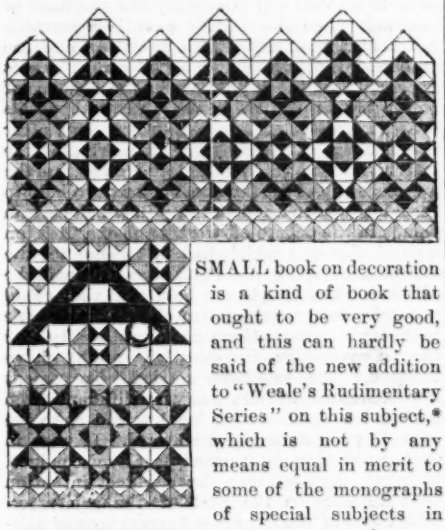
Some Publications on Decorative Design.



A SMALL book on decoration is a kind of book that ought to be very good, and this can hardly be said of the new addition to "Weale's Rudimentary Series" on this subject,* which is not by any means equal in merit to some of the monographs of special subjects in connexion with art which have appeared among the earlier numbers of this generally excellent series. The object of such a publication should be to go to the root of the matter, and give the standing-ground from which to go further and fare better. Mr. Facey's book seems rather a collection of hints with pen and pencil; some of them good, some not very good, and not bound together by any very prominent or recognisable general principles. The aim of the writer, he would perhaps reply, is not to suggest such principles, but to give practical hints, "a course of suggestions applicable to those experiences ordinarily met with by the house-painter, who too frequently knows little or nothing of the most elementary rudiment of his business in its higher form as a decorative art." This is rather a contradictory sentence. The "higher form" of the painter's business, as "a decorative art" certainly needs something more, to furnish any useful guide, than some suggestions; and, on the other hand, it may be doubted whether such suggestions are of any real value to a less ambitious painter who wants to produce something "tasteful" without knowing exactly how to do it. Such a man is not likely to get further than copying and reproducing the suggestions given him, wherever they seem to fit in. He might do something worse if he trusted to his own taste and invention, no doubt; but the adoption of a few diagrams of ornamental design, however good in themselves (those given here are not all good), will really not bring him a whit nearer understanding what he is about, or make a decorator of him. The most practical and purpose-like remark in the book, looking at the matter in this light, is the recommendation in regard to the art of stencil-cutting, "First learn to draw." And the man who has learned that would not be very much in want of the rest of the book, except where it deals with practical difficulties in regard to the preparing of surfaces and colours for decoration.

A good deal of the small treatise is devoted to the consideration of stencilling, which may be called the workman's branch of decorating, and many of the hints given in regard to the use of this method of covering a space inexpensively with more or less decorative detail are useful. We differ from the author, however, in the idea that "taking out the ties,"—*i.e.*, painting over the gaps in a stencilled design by hand,—is by any means a necessary or even desirable sequel to the process. A stencilled pattern had better appear as such, and not try to look as if drawn by hand; and part of the art of stencil-designing consists in so arranging the design that the necessary gaps left for the ties should not appear to injure or break up the design. The character of a stencil pattern should be peculiar to that process,—should arise out of the process,—and should show its origin and manner of working frankly.

It would be perhaps unfair to criticise from an artistic point of view the original sketches of detail given; a good many of them are fairly applicable to their supposed position, and well drawn in regard to balance and delineation of curves, but none of them can be said to belong to other than a very ordinary standard of decorative art. In some instances there are heinous mistakes made which should be pointed out, as in the suggested external stencil adornments for a cemented house-front, fig. 57. This shows for its principal feature the surrounding of the windows with sprigs of foliage running up vertically from the extremities of the window-sills and turning to meet over the top. The planting of such ornaments on the face of the wall outside of the architrave lines, with no bounding line to give it weight or architectural form or feeling, would merely result in giving a ragged and tawdry effect to the whole. The writer can have no perception of the proper relation of ornament to architectural detail and architectural character, or he would never have put on record such an unhappy suggestion as this. We should regard it also as a great error in judgment to place conventional representations of flowers in the windows of a conservatory, where the real flowers are present in their natural form. Nor is it the right way of regarding decorative design to say that the dictum that all floral forms are to be conventionalised in ornament, is chilling to the student of nature, as presenting him with nothing but "cold conventionality." If the student of nature wishes to draw or paint flowers, that is one thing: if he wishes to invent ornament, that is another thing. In the latter case the floral forms are merely suggestions on which to build a creation of his own, having more direct relation to the architectural forms in connexion with which the ornament has to be used. That is, in fact, the real interest of decorative design; it is not copying, but creation or adaptation, calling out a different kind of intellectual effort from painting in its usual sense. The book is meant well, but we cannot regard it as at all up to what the subject demands, even in a "rudimentary" treatise.

The relation of American architecture and decorative design to European is an interesting and at the same time rather perplexing subject. For a long time it has appeared to amount in the main to following each phase of fashion in English work at a little distance behind, the various tastes for Gothic and Queen Anne, &c., appearing to reproduce themselves with little difference on the other side of the Atlantic. The author of "Democracy" has shown us the picture of an American lady of æsthetic tastes arranging her new room according to her liking, and we seem to be reading a description of the furnishing of a "flat" in some æsthetic quarter of London. America has developed individuality of late in certain branches of art, as wood engraving and decorative tiles; but not much, as far as we have evidence, in architecture and decorative detail generally. There is a certain satisfaction to be derived from the fact that the States chiefly copy English work rather than that of other European nations, and thus pay us the compliment of remembering our close relationship and following our tastes. We, on our part, somewhat tired of our own fashions, would be glad to get the benefit of some new idea from across the water. In regard to practical matters of comfort and convenient arrangement of buildings, our cousins could probably give us a good many suggestions; in regard to art, they seem at present to have little to offer that is new. We make these reflections *à propos* of the first number of a new art-magazine published in New York, "The Decorator and Furnisher," which has been forwarded to us, and which in some respects, we confess, puzzles us a good deal. The illustrations, with the exception of a certain chromo-lithograph, are mostly very good, and the artistic views expressed in the text in many respects sound and sometimes original. With these qualities is combined a style in some of the letterpress which in this country would be supposed at once to stamp a paper as third-rate. Among the editorial reflections on the first page, for instance, occurs a paragraph, to the effect that, "Speaking of good times reminds us that we want some first-class canvassers,—some of the kind that can capture a subscription at sight. This seems to be a good opening for some regular lightning-rod purveyors." Imagine an English paper professing to aim at a high position among its class, delivering itself in this fashion. In some other respects the paper is

* Elementary Decoration: a Guide to the Simpler Forms of Everyday Art as applied to the Exterior and Interior of Houses. By James Williams Facey, jun. Illustrated with sixty explanatory engravings, chiefly from designs by the author. London: Crosby Lockwood & Co. 1882.

English enough. Two of the articles are by an English architect and an English decorator, Mr. Edis and Mr. Day. The first two illustrations, representing what a carpet design should not be, and what it should be, respectively, show that the standpoint is still in the rear of English taste, for the bad form of carpet, which is very pronounced, is certainly not a kind of article that would *now* be found "in every average sale-room" in this country, though it would have been not so very long ago. The carpet intended to show what carpets should be is a very pleasing and very suitable design. Mr. Edis commences a series of articles on "Art applied to Decoration and Furniture of Modern Houses," in which we have no doubt that there will be a good deal that is suggestive; but it is a pity Mr. Edis commences by repeating the common fallacy of the moment about all art being decorative, and to give such misleading examples of this: stating that Titian "put his noblest thoughts on the common lath-and-plaster walls of Venice," as if every one did not know that Titian's greatest works were easel pictures; and that Michelangelo's greatest work was the decoration of a chapel ceiling, as if Michelangelo or any one else looked on the Sistine paintings as decorative, in the modern æsthetic use of the term. We hope the readers of the American journal will not accept such statements without a good many grains of salt. Mr. Day delivers a criticism of Owen Jones and his dicta on decorative art, in which he makes some points. But some of Owen Jones's mistakes merely amount to having asserted rather too dogmatically what is nevertheless usually right. It is quite true, as Mr. Day points out, that the tangential junction of curves is not a law or universal habit of nature, as Owen Jones very unaccountably asserted it to be; but it is nevertheless the fact that very little good ornament has been found or can be made in which the springing of the curves from one another is not tangential. So also it is undoubtedly true that all ornament need not necessarily, as Owen Jones asserted, be based on geometrical form and spacing (it must be remembered that Japanese ornament was not discovered when he wrote his "Grammar"), but it is certain that all the highest class of ornament that we have yet seen is geometrical in its basis. On the whole, there are not quite so many blemishes in the "Grammar of Ornament" as Mr. Day perceives; but nevertheless we may concur in his final summing up, which he adds as a thirty-eighth commandment to the thirty-seven of the Grammar: "Be grateful for your Owen Jones, but do not swallow his principles whole." Some designs for furniture that are given are good, and have some little novelty of style in the rich decoration of the surfaces by (apparently) inlay. Of the chromo-lithograph which professes to give some hints, in the shape of portions of ceilings, for design in colour, the less said the better; it is common-place in design, and poor in colour. As the proprietors are invoking the aid of English writers, they might be wise to get some English colour designs: they would probably be better than this, at all events. But in the main the "Decorator and Furnisher" seems to promise to be of some interest and value for American readers, at any rate; and we hope that it will obtain the desired phalanx of canvassers equal to "capturing a subscription at sight."

A publication of much the same type comes to us from Berlin, in the shape of the first number of the "Illustrierte Schreiner-Zeitung" (Illustrated Joiner's Journal; or "Cabinet-maker's" would, perhaps, represent it more correctly). This deals with a narrower section, of course, of decorative design, and the value as well as the bulk of the periodical, judging from the first number, lie chiefly in the illustrations. They are very neatly drawn and got up, as German illustrations usually are, but there seems to be no life or orginality, and certainly little enough of beauty or refinement, in German work of this class. Whatever the Germans may be doing in other branches of art, in this of decorative furniture they are certainly very backward. They seem content always with the same rather heavy and clumsily-assorted architectural forms, and the same uninteresting and inelegant ornamental detail; and among the furniture drawn in these plates there is really nothing we can call good or in pure taste except the doors in the second plate, which are perfectly simple six-panelled doors made of various woods, and the panels inlaid with a rather pretty conventional foliage pattern. In some stools and a table in the fourth plate the vulgarities of Louis Quatorze detail are reproduced in wood, without even the kind of refinement which the style in its original form might claim, owing to the fine execution often displayed in it. There is a coloured lithograph of a panel of inlay for a door, in what material is not stated, probably various coloured marbles; it is one of those inlaid imitations of natural flowers in which some artists both in Germany and Italy excel; but the flowers are intertwined around a framework of very poor and tasteless design. Altogether, we cannot say much for Berlin taste and achievement in these matters, if this new journal is to be taken as any indication.

ERRORS OF ARBITRATORS.

ANY ONE who knows anything at all of building contracts and building disputes is well aware that, when litigation arises out of them, in by far the larger number of instances the differences are settled by an arbitrator. That this is a much cheaper way of settling disputes than by the decision of a judge is more than doubtful, for it must not be forgotten that a competent arbitrator must be properly paid, and that the room in which the arbitration is held cannot be had for nothing. Therefore, in the result arbitration may be considered just as expensive a luxury as an ordinary lawsuit,—that is, one which does not involve any extra expense, such as the costs for commissions abroad. It is, therefore, of the greatest importance that arbitrators should act with the strictest regularity, and thus not put the parties either to the great expense of a new arbitration or to the lesser loss incurred by an attempt to set aside the award. For it is marvellous how eager suitors who have once entered into legal battles are to fight them out to the bitter end, and how they clutch at the smallest shred of a possibility of upsetting an adverse award. Again, the most upright arbitrator may in a moment of forgetfulness commit an act of indiscretion which may afford just the barest bit of ground upon which a dissatisfied litigant may hope to find room to upset the award, for "there may be ample misconduct in a legal sense to make the court set aside an award, even where there is no ground for imputing the slightest improper motive to the arbitrator." It is difficult, indeed, to find any strict definition of misconduct such as will induce a court of law to upset an award. Perhaps it may be roughly stated to be conduct which may tend to make the award an unjust one. Not an action which actually did make an award unfair, because about that there can be little question, but which might reasonably influence the arbitrator one way or another. A very recent case has been before the Court of Appeal, and was decided so lately as November the 8th, which will serve as an example of what has just been stated. The arbitration was in regard to certain land which had been taken by the Hull and Barnsley Railway. The arbitration in connexion with it had ended on the 13th of March, and on the 25th of that month the arbitrator, before making his award, had gone down and viewed the land. When on this spot he met the company's engineer, and had a casual conversation with him, which in no way related to the land except that, as a matter of curiosity, he asked him where the old river wall was, and then the engineer also pointed out the jetty said to have been silted up. Neither of these questions had any relation to the matter in controversy. Under these circumstances, the Court of Appeal did not consider that there was anything done by the arbitrator which could have influenced his decision, although the Court below had thought otherwise. But in delivering judgment, Lord Justice Baggallay made the important remark that, had there been a conversation between the arbitrator and the engineer as to the value of adjacent land, then this might have influenced the arbitrator's mind, and so have caused the Court to have set aside the award. But this remark and the judgment show very well how extremely careful arbitrators must be. A conversation of a few minutes about some points in adjacent land was very nearly upsetting a careful and lengthy arbitration which had run over fifteen days, and had the conversation been a little more connected with the land in dispute, there can be no doubt that the money spent over the arbitration would have been wasted. In an earlier case a very strenuous effort was made to upset an award, because the umpire and the arbitrator, together with a solicitor and shorthand writer, lunched together with and at the expense of one of the litigants. It was positively affirmed that the subject of the arbitration was never mentioned at the luncheon. "I have had," said the judge, "a great deal of difficulty on the subject, and I must confess that my first impression was that it would be better, on general principles, considering that what passed at the luncheon-table might, by possibility, have influenced the mind of the arbitrators, to set aside the award as a lesson to all parties in future not to adopt that line of conduct. But upon carefully considering the authorities, and upon looking at all the surrounding circumstances of the case, I come to the conclusion that I should not be justified upon setting aside the award on that ground." The judge then went over the evidence to show that nothing occurred which could, in the slightest degree, influence the umpire's judgment. But just as the Hull and Barnsley Railway case seems to contain a distinct warning to arbitrators not to go and visit a building or land the subject of dispute without a representative of each of the parties being present, so as to prevent any possibility of a suspicion of misconduct, so this earlier case is a warning against lunching either with or at the expense of one of the parties. In a still earlier case it appeared that the arbitrator, in the absence of one party to the reference, and without his consent, questioned a witness some days after the hearing. The arbitrator declared that the interview did not influence his judgment, and the apparent object of the questions was to help to form his opinion as to the way in which certain things in the nature of work to be executed on a particular spot which had to be done for the effectual carrying out of the award could be effected. But the Court held that they could not take into consideration the nature of the statements because there was a probability that the conversation in question might have influenced the arbitrator's mind. To consult a professional witness was very different from asking the opinion of a legal friend as to the best way to draw up the award. It was, in fact, what may be termed legal misconduct, although done without the slightest intention of unfairness on the part of the arbitrator. There are, of course, more flagrant acts of misconduct which too may be done without any corrupt motives, which clearly are of a nature to cause an award to be set aside. Some of these have been summarised in a well-known work,—Russell on "The Power and Duty of an Arbitrator,"—in these words:—"Thus the award will be set aside if the arbitrator refuse to postpone a meeting for the purpose of allowing a party time to get counsel on his part, where the other side unexpectedly appears by counsel; so if he receives affidavits instead of *viva voce* evidence, when he is directed to examine the witnesses on oath," and "if the arbitrator make his award without having heard all the evidence, or having allowed the party reasonable opportunity of proving his whole case." It is very clear, therefore, how very careful an arbitrator must be not to do any act which can, in the slightest degree, be likely to influence his opinion in an irregular manner. If he does do some such act, and becomes aware of it, he should at once give the parties full information of the particular step, and if the parties either expressly or impliedly waive an objection which would otherwise be valid, then the irregularity is purged and the award will stand good. What, however, we have here more particularly desired to point out is, not how irregularities may be waived, but the necessity of guarding against their occurrence at all. The instances which have been given above, and the very recent case of the Hull and Barnsley arbitration, show conclusively that the most apparently innocent acts may almost suffice to upset an award.

Dumbarton: the Deepening of the River Leven.—At the last meeting of the Dumbarton Harbour Board, it was agreed to accept the offer of 100*l.* forwarded by Mr. J. Watt Sandeman, C.E., Newcastle-upon-Tyne, to report as to the effect of deepening the river Leven 3 ft. deeper than that of the Clyde between Glasgow and Greenock, the effect it would have on its banks and the bridge across the river, as also the plant necessary for so doing.

RICHMOND CASTLE.

The Swale, one of the principal tributaries to the Yorkshire Ouse, and the stream in whose waters Paulinus of York is said to have baptised 10,000 Pagan Saxons, rises in the north-western quarter of the county, in a wild and spacious tract of moor and moss, studded over with heights ranging from 500 ft. to 1,500 ft., and even reaching 2,000 ft., from all parts of which a number of becks and gills converge upon the old town of Muker, to form there a considerable volume of water in its brightest, purest, and most attractive form. From Muker the Swale takes, with many windings, an eastern course, down a dale, wild and lovely even among Yorkshire dales, past the town of Reath, beneath many a scaur and across many a holm, past places whose names fall strange upon the Southern ear, by many a camp of unknown antiquity, and by abbeys now venerable in ruin, until, about eighteen miles below Muker, it emerges in ample volume from one of the most charming of its gorges, and in one of a succession of bold and graceful curves, sweeps round a tall and precipitous headland of rock, which, rising on the left or northern bank, projects about 130 ft. above the stream, and seems fitted by nature for the site of a mediæval fortress. Such at least was the opinion of Earl Alan, when, five years only after the coming in of the Normans, in the centre of a brave and insubordinate population, here, upon the tabular summit of the rock, he founded the celebrated Castle of Richmond, the seat of a great Northern earldom, and the capital of a Shire of five wapentakes, and of an Honour, to both of which it gave its name.

While the castle occupied the broad summit of the promontory, and was protected naturally on the west, south, and eastern faces by a cliff, the river, and a steep slope, the neck of the peninsula to the north, not above 20 yards in breadth, connected the castle with the town which speedily rose up under its protection. Besides works in masonry, there seems originally to have been a ditch across the neck, including a narrow esplanade in front of the fortress. This is now, in great measure, filled up and built over, though the line of the depression may still be traced. Around the castle, but beyond the slope, and occupied by the old town, and beyond the river, the ground rises considerably and steeply, so that the castle stands in the centre of an amphitheatre of higher ground, though at distances far beyond the reach of the artillery of the eleventh or twelfth, or even of the fifteenth or sixteenth centuries. A short but charming summary of the position and features of Richmond Castle will be found in Freeman's "Norman Conquest" (vol. iv., p. 296).

Before the Conquest this territory, under some unremembered name, was the inheritance of the English Earl Edwin, whose "aula" or hall was at Gilling, about one mile and a half east-north-east of the village of that name, and about the same distance from the castle. Here the earthworks that usually marked the great English residences long remained, though now they have disappeared under the plough and spade. Gilling, by Bede called "Ingetlingum," being the "ing" or meadow of Guille, is a place remembered for the slaughter there of Oswi, King of Northumberland, in A.D. 651. He also tells that an expiatory monastery was built, where prayers were offered up for both murderer and murdered. Of all this nothing is locally remembered, but the actual site of Earl Edwin's residence is still called Gilling Castle, and is in a field attached to Scales farm, near a way known as Gilling-lane. Earl Edwin's "aula," though commanding a noble view, had no natural advantages for defence, and, therefore, Earl Alan, on obtaining the soke of Gilling, moved the chief seat from hence to the place which was named, not inappropriately, Richmond.

It is not probable that a position so marked out by nature as a rock of defence was neglected by the early inhabitants of the district. A formidable entrenchment, known as the Scot's Dyke, is still traceable from Gilling village southwards to the Swale, south of which it sweeps round to the west so as to protect the castle rock. At a distance of half a mile, Roman remains, coins, and pottery have been found between the rock and the river. There is, however, no actual evidence that the site of the castle was ever actually occupied by either Briton or Roman.

Alan, surnamed Fergaunt, was the second son of Eudo, and, in succession to his father, Earl of Bretagne. He was present at Hastings, and,—by a charter preserved by Camden, granted by William while besieging York, and therefore at Christmas 1069-79,—received the land of Earl Edwin in Yorkshire. The grant is specified in Domesday as the "Terra Comitis Alani," containing 199 manors, of which 108 were waste. The roll begins with "Ghellinges habuit Edwinus Comes." Domesday also mentions the castle. The "Registrum Honoris de Richmond" informs us that Earl Alan founded the castle there, which, no doubt, he did after his return from the harrying of Northumberland in 1070, and built the encircling wall as quickly as possible,—it is said in 1071, as without it he could not long hold the place. He also attached the chapel of his castle, and with it the parish church, to the house of St. Mary at York. Alan married the Conqueror's daughter Constance, but died 1089, childless. Dugdale says he held, in divers counties, 452 lordships. The soke of Gilling was under Earl Edwin geldable, but it was afterwards enfranchised in favour of the Norman lords. Alan was succeeded by his brother Alanus Niger, Alan the Black, Earl of Bretagne and Lord of Richmond, which had become an Honour. He died, in 1093, leaving a son or a brother,—

Stephen, Earl of Bretagne,—who died there, 1137. He is said to have been succeeded by his second son,—

Alan, who is styled "Comes Britanniæ et Angliæ." He also held the Earldom of Cornwall. He died, probably 1145-6, leaving a son,—

Conan le Petit, Duke of Bretagne and Earl of Richmond, the first so called. He died 1171, and is generally regarded as the builder of the keep in 1146. He gave to St. Mary's the tythe of the castle mills. He married Margaret, sister to William, king of Scotland, and he left by her a daughter, his heiress. At his death the Honour fell into the hands of Henry II. 18 Hen. II., 1171-2, the Honour of Earl Conan was let in farm by the king, and the farmer had to account for the manors, the service of the Drengages, and the third part of Gipeswic, besides the scutages of the knights. The number of the latter had, however, not been correctly ascertained. The fees were scattered widely through many counties.

Constance, Duchess of Bretagne, married thrice,—first, in 1166, Geoffrey, fourth son of Henry II., by whom she had Arthur, whose death in 1203 has been dramatised by Shakspeare. Geoffrey was killed at a tournament at Paris in 1186-7. Her second husband was Ranulph Blundeville, Earl of Chester, from whom she was divorced. Her third was Guy, Vicomte de Thouars, who became tenant by the courtesy, and who died in 1213. By the last she had two daughters, of whom the eldest, Alice, was the final heiress.

Alice was in ward to King John, who was in no hurry to give up her possessions. 1st John the earldom contained 140 fees, on which the Countess of Bretagne paid 280 marcs for the first scutage in the new reign. This may, however, have been Constance, the time of whose death is uncertain. 2nd John, the honour was in the king's hands. 4th John, 1203, Guido de Toure [Thouars] was "quondam comes Britanniæ," so that Constance must then have been dead. His acts in the earldom regarding certain fines are confirmed by the king. In 1204 John appointed bailiffs for the Honour. 1205 he informs the tenants that he has granted the Honour, late that of "G. Comes Britanniæ," to R., Earl of Chester, the earl from whom Constance was divorced. John was at Richmond on the 14th and 15th of February, 1206.

8th John, 1207, Hugh de Nevill held the castle as constable during pleasure. He superseded Roald Fitz-Alan, who was constable in 1205, and had a considerable grant of lands. Roald had been disseized for refusing to swear touching the thirteenths, and gave 200 marks and four palfreys to be quit of his fine and to have his office restored, and besides to have letters patent enabling him to distrain upon the knights of the Honour for their castle-guard.

1209, 10th John, Alice, duchess of Bretagne and Countess of Richmond, invited her Breton vassals to support King John. She was probably still a minor. April 29th in this year, John was again at Richmond, and again, 15th June, 1212, in which year, and 1213, he still held the Honour, and in 1215, Roald was constable. Soon after, 17th John, 1216, the constable of Richmond Castle was directed to obey the orders of Ranulph, Earl of Chester, and to discharge from prison the knights and men belonging to Roald Fitz-Alan, who, therefore, in the short intervening time seems to have fallen under suspicion and then to have cleared himself. The Earl of Chester probably succeeded him, for in 18th John, 1216, he is ordered, if he cannot hold the castle, to destroy it utterly. Countess Alice married Peter le Dreux, of the blood royal of France, who in 1219 had livery of the Honour. 14 Hen. III, he is styled Duke of Bretagne and Earl of Richmond. By his adhesion to French interests in 1235-6 he forfeited his English honours. He died childless in 1250.

In 1241, Henry granted the Honour to Peter of Savoy, uncle to Queen Eleanor; he held the Honour and Shire of Richmond till his death in 1268, when, under a power granted him by the king in 1262, he bequeathed them to the queen, who compounded for an annuity of 2,000 marks. Henry then, in July, 1268, granted the Honour to John le Dreux, son and heir of the preceding Peter.

John le Dreux, Duke of Bretagne, succeeded to the earldom in 1268, but passed it to his son. He died 1286.

John le Dreux had the earldom from his father in 1268, and by licence from Henry III., his father-in-law, in 1269. He also became Duke of Bretagne. He married Beatrix, daughter of Henry III., and was killed at Lyons, 1305. This earl, on his departure for Palestine in 53 Henry III., founded a chantry for six priests in his chapel of Richmond, which could scarcely have been the Norman oratory in which six priests could barely find room. They were to be lodged near the great chapel, but to leave the castle during war. Duke John left Arthur and John.

John, the second son, succeeded by grant from Edward I., 1306. He was summoned as "John de Britanniæ, comes Richmond." He was taken prisoner while in the king's service in Scotland (17 Ed. II.), and the king, failing to obtain money for his ransom from Parliament, addressed a letter to the tenants of the Honour, adjuring them, for the sake of natural justice and by their duty and fealty, to contribute according to their holdings. The appeal seems to have been successful, for next year the earl was free. He died unmarried, 1334, and was succeeded by the son of his elder brother,—

John le Dreux, Duke of Bretagne, and Earl of Richmond from 1335 to his death, childless, in 1341, when the earldom escheated to the crown. Upon his inquest it is stated, "Et est apud Richmond quoddam castrum quod nihil valet per annum infra muros, nec in fossa ejusdem castri, sed multum indiget in reparatione domorum et murorum dicti castri." He had licence to wall the town, and houses were cleared away for it; but it is doubtful whether anything more was then done. The gateway between the castle and the river bridge seems of about this date, and may very probably have been part of an intended wall.

John le Dreux, half brother to the last earl, and Comte de Montfort, became Duke of Bretagne, and had a grant of the earldom of Richmond in 1341. He died 1345, leaving a son; but, probably by some arrangement with the king, the earldom was granted to John of Gaunt, who was created earl, but resigned the whole into his father's hand in 1372.

John le Dreux, the "Valiant," Duke of Bretagne, Comte de Montfort, son of the last Earl John, received the earldom from Edward III. in 1372, and is styled Earl of Richmond. His French interests were very great, and (7 Ed. II.) he forfeited those held in England. His sister Joan, widow of Ralph Basset, had a grant of the Honour, as afterwards had Ralph Neville, first Earl of Westmoreland. It was then held successively by John, Duke of Bedford, Edward of Hadham, and Henry VII., with whom ceases any remarkable interest in the owners. The title, an evident but scarcely creditable proof of the estimation in which it was held, was conferred by Henry VIII. and Charles II. upon their illegitimate children.

DESCRIPTION.

Though not precisely of one date, the remains of the castle are mainly of the Norman period. The keep has of late been occupied as a militia store, and is so employed to the strict exclusion of visitors, notwithstanding that spacious barracks have been built not far off. The

remainder is in ruins, but the prohibition covers the whole area, and the keep is not allowed to be sketched even from the exterior. There is no trace of any fortification preceding the present, nor of any of those massive earthworks which usually accompany Norman castles, when placed on English sites. These, whatever they were, were at Gilling: all here is Norman, and the chief works therefore are in masonry. Those in earth are but moderate.

The castle seems to have been composed of a main, east, and north ward or barbican. The main ward is roughly triangular, the outline being governed by the ground. The base or southern face is about 186 yards long, and crowns the edge of a cliff of about 30 ft. high, at the foot of which a very steep slope of 100 ft. more descends to the river. A shelf has been judiciously cut at the base of the cliff for a modern footpath, whence is a charming prospect of the river and the castle mills, as well as a close view of the exterior of the wall. The west side,—about 130 yards,—crowns a depression very steep but not precipitous, and now more or less covered with cottages. Here, just below the castle wall, is a water-gate, having a highly-pointed arch placed in a segmental recess. This gateway stands in a fragment of wall, probably part of the defence of the town, and about 5 ft. thick. The east front, also 130 yards, is less strong by nature. There, from the base of the wall, which is of great thickness, a gentle slope descends towards the river, from 50 to 100 yards distant. A part of this slope is occupied by the east ward. The northern part, or apex of the triangle, is rounded, and upon it are placed the main entrance and the keep.

The north ward is very small, about 40 yards by 30 yards, and was, in fact, a sort of triangular barbican or outwork, covering the keep and gateway, and occupying the neck of the peninsula between the castle and the town. Of this ward there remain only traces of the *enceinte* wall, and a fragment, probably of the outer entrance, between the keep and the town.

The east ward may be a little later than the rest. It is in plan a sort of half oval, the chord of 55 yards being applied to the curtain of the main ward, and the long semi-diameter of 80 yards descending the slope. The object of this enclosure, at present called the cockpit, was to occupy what would otherwise have been a convenient post for an assault, and to cover the postern which opened in the main curtain near the south-east angle, and whence a path led down to another gate in the east ward wall into a ditch which served as a covered way to the river. The wall of this ward is less solid than that of the main ward, and may have been an addition, though probably an early one. It not only covered the postern, but afforded a safe access to the castle mill, and stood to the south-east between the castle and the river, at a point where the river makes a sharp turn, and where a reef of rock supplied an effectual and inexpensive weir. The church mill has a weir of its own, and is about 200 yards lower down the stream.

Although the keep is placed at the northern point of the main ward and upon the *enceinte*, it stands mainly on the north ward, and is placed where it could most effectually oppose any attack on the town side. It is in plan rectangular, 56 ft. east and west, by 48 ft. north and south, and about 100 ft. high. The walls at the base are about 11 ft. thick, and are reduced by two sets-off at the level of the upper floors. It has the usual characteristics of a Norman keep, though with certain peculiarities. At the base are the usual footings suited to the irregular levels of the ground, but from these the wall rises quite plain about 10 ft., nearly to the level of the first floor. Here, from this stage as a plinth, rise the usual broad flat pilasters, one at each end covering the angle, which is solid, and supporting the usual four rectangular turrets above. These, however, are peculiar, in that the pilasters cease at a string which marks the base of the parapet of the curtain. Above this the outer half of the pilaster is continued as a narrow strip, which dies into the wall of the turret at the base of its special parapet.

On the north and south, or wider fronts, two pilasters, somewhat narrower than the flankers, intervene. On the east and west faces there is but one, and that a much narrower one, in the centre. These are all stopped by the string at the base of the parapet. Besides this string, the tower has exterior indications of its several stages. The first floor is indicated by a bold half-bead carried round the three outer faces of the keep. At the level of the second floor is a set-off of about 6 in., and a similar one marks the level of the third. These are continued round both walls and pilasters, reducing the wall by about 1 ft. in thickness, and probably the modern floors conceal similar sets-off within. There is one other peculiarity. The south or inner front is not so wide by about 6 ft. as the north, and the east front is 4 ft. less than the west. This is caused by a recess, or rather a nook or hollow angle, occupying the south-east angle, and measuring 6 ft. by 4 ft., in which, at the first-floor level, where the recess begins, is the entrance-door. The base of the parapet and lower part of the turrets seem original and of Norman date; the embrasures both of turrets and curtain are probably modern. One turret, at least, has the original Norman doorway opening on the rampart. These turrets had a first-floor, as was usual, the holes for the beams of which remain. The basement and the two lower floors are of excellent ashlar work. The upper floor is inferior, though sound work. It is of different date.

The inner or southern face differs considerably in its basement from the rest. Here is a large, lofty, round-headed archway, of 11 ft. opening, plain, but with recesses for two flanking columns, nook-shafts, on each side, inside and out, with ornate capitals, eight in all, and a very bold rebate, showing that the doors opened outwards, a fact corroborated by the position of the bolt-holes. Moreover, the whole of this basement face is of very rough rubble. It is clear that here was a low building against the keep, part of its original design, and that this archway opened from the basement of the keep into an exterior chamber, now removed, probably with a small exterior doorway.

Originally the floors were all of timber, and no stair in masonry connected the basement with the floor above. The well, of the date of the keep, was central, as at Conyngsborough. In the Decorated period, a large, strong, eight-sided pier, upon a square base, was built over the well, which is reached by means of a lateral arched recess in the east face of the pier. From the four main faces of the pier spring four ribs dividing the chamber into four bays, each of which is also ribbed diagonally with cross springers, plain, but producing an excellent effect. The wall shafts are half octagons with square bases. This chamber is 35 ft. by 19 ft. It has no lights, vents, or recesses. In its south-west corner, barely touching the wall, is built a thin cylindrical shell of masonry, containing a spiral stair, which ascends to the first floor. The door of this is to the north-west, and it is lighted by a loop to the east, both opening from the chamber in which it stands. This staircase is an addition, probably of the date of the vault. It is now disused and closed at its upper end. Probably it always stopped at the level of the first-floor. This is a curious example of the conversion of the basement of a Norman keep into a late Decorated chamber. The first-floor of the keep of Brougham has undergone a similar change.

The regular and original entrance to the first floor of the keep is by a square-headed door of moderate size, flanked by worked columns, now gone, which supported a round-headed recessed arch. This door is in the south face, close to the east end, in the hollow angle before described, and it is entered from the ramparts of the *enceinte* wall. It opens into a lobby in the wall, 9 ft. wide, and on the left a small door opens upon an ascending flight of stairs, and a second, about 4 ft. 6 in. wide, opens direct into the first floor. This floor is of the same dimensions with that below. It was the state-room. It has three windows in the north wall, of about 1 ft. opening, round-headed. The recess in which each is placed has but a slight splay, from 3 ft. at the window to 4 ft. 6 in. in the chamber. These are flanked with detached columns, and above is a plain slender dripstone. The recesses rest upon a string-course, embattled or billeted along its under side. These windows, on the outside, are also flanked by columns and furnished with dripstones. There is also a door in the south-west corner of the room, which leads by an oblique passage into a small mural chamber, which opens by a large round-headed door, or window, of 7 ft., opening on the west face of the keep, at the level of the contiguous curtain. The present opening has been restored, but, no doubt, represents an old one, though for what purpose intended is difficult to say. A loop here would have raked the curtain in safety, where this opening, quite within reach of a short ladder, would be very dangerous. It is, indeed, possible that the original opening was a loop, lighting a small garderobe. The spiral stair, now closed, must have opened just in front of this door. There is no visible fireplace. In the centre of the room, over the lower pier, is a cylindrical pier of rather smaller dimensions, about 3 ft. diameter, and broken off. This may have been intended to support a vault, of which, however, there are no traces on the walls. This floor is or was filled with the trowsers of her Majesty's militia, and therefore is only allowed to be inspected through a grated door, even by those who are fortunate enough to be allowed to see the keep.*

G. T. C.

RECENT ALTERATIONS AT THE TOWER.

"I pray you let us satisfy our eyes
With the memorials and the things of fame
That do renown this city."

THOSE who have allowed some months to elapse since their last visit will find important alterations in several portions of the Tower of London. With one or two exceptions the changes made tend to remind us that the Tower once possessed the three-fold character of fortress, palace, and prison. There is, then, the greater pleasure in recording them at a time when, as now, the historical features of our city are rapidly disappearing before the pickaxes of Utility and Improvement. Taking first in our survey the parts which are commonly shown to the public, there will be missed the popular long line of armed figures which formed so remarkable and beautiful a display in the Horse Armoury, and the Queen Elizabeth's Armoury in the White Tower, with its popular attractions of the beheading-block and thumb-screw, the Skevington's gyves (scavenger's daughter), and the axe which forcibly appealed to even the most illiterate. From the earliest ages the Tower has formed the principal place of deposit for the national accoutrements and arms. In the year 1213 Geoffrey de Mandeville was commanded to surrender the Tower to the royal authority, "the arms and other stores being therein." King Henry III. issued a mandate to the Archdeacon of Durham to transmit hither "twenty-six suits of armour five iron cuirasses one iron collar three pairs of iron fetters and nine iron helmets," which the preceding monarch had left in his charge. During this and the two following reigns similar writs occur. In the year 1399 John de Flete, Keeper of the Arms in the Tower, was ordered to buy and provide as many "espringalls quarrells hauberks lances arbalasts bows and arrows," as were necessary for the defence of Southampton Castle. Two years later the Sheriff of Gloucester was called upon to purchase and send to the Tower 1,000 bows and 300 sheaves of arrows. Of the reigns of King Richard II. and his successors up to King Henry VIII. many interesting documents exist relating to the warlike stores contained in and issued from the Tower. More notable, however, is the inventory taken in the first year of King Edward VI. Here† we find described several of the articles comprised in the present collection; as, for instance, the brigandines with coloured silk and satin sleeves,‡ the "Targetts steilde with gonnes" (being round shields with pistols in their centres), the "Holly water sprincle, with three gonnes in the topp,"—since labelled as "King Henry VIII.'s walking-staff," and the like. Paul Hentzner the German traveller who gives us so vivid a picture of London in Queen Elizabeth's time, describes his inspection of the Armoury, mentioning several of the still most popular exhibits,—such as "spears out of which you may shoot, shields that will give fire four times, a great many rich halberds, commonly called partisans, with which the guard defend the royal person in battle, the suits of armour of Henry VIII., many and very beautiful armours as well for men as for horses, the lance of Charles Brandon, Duke of Suffolk, three spans thick; two pieces of cannon,—the one fires three, the other seven, balls at a time [these are the guns cast by

* To be continued.

† The inventory is in the possession of the Society of Antiquaries.

‡ The brigandine jacket, made by enclosing small squares of steel between two layers of canvas. This, with the morion, formed the body and head armour of the foot-soldier *temp.* Henry VIII.

Peter Baude, who succeeded the three brothers Owens in the royal foundry at Houndsditch; the former gun bears 'Petrus Baude' near the breech] . . . . cannon for chain-shot and balls proper to bring down masts of ships," &c. It is to be carefully observed that Hentzner, writing ten years after the defeat of the Armada, makes no reference to a "Spanish Armoury" or to any arms taken from that fleet. Had a collection of this kind been made (and it is noteworthy that already the Tower Armouries formed one of the "sights" of London), it would certainly have been brought to the notice of one who would carry abroad the fame of such trophies. In a survey of 1668 made by William Legg upon his re-establishment in office as Master of the Armouries is scheduled a "Spanish coller for torture, taken in 1588," though this, the first mention of a Spanish trophy, is perhaps no less fanciful than the assignment in a preceding item of the complete suit of plate armour to John of Gaunt. Yet Legg's inventory is highly curious as containing the earliest account of the mounted figures,—then ten in number,—described as "sundry compleat armours and others whereof some of them [*sic*] were standing formerly at Greenwich [the royal palace of Placentia], in the greene Gallery there." They were all mounted on "horse statues of wood," and ascribed to various sovereigns, the Earl of Leicester and Charles Brandon, Duke of Suffolk, though our faith is somewhat shaken when we read of a suit of white, *i.e.*, plate armour, for William the Conqueror.* In this document the so-called "Spanish Armoury" has no place; though in an inventory of date 1675 we read for the first time of a "Spanish Weopon-house." The name is manifestly derived from the detailed contents of the building where whilst we have Danish clubs, Venice targets, English javelins, Dutch half-pikes, &c., the weapons distinguished as Spanish largely predominate in number. Nothing is said of the latter being *spolia opima*, and the term Spanish clearly applies to their fashion or manufacture. In the Weapon-house, which stood to the east of the now Guard-room by the Wakefield, or Record, Tower, we first discover "King Henry ye 8ths walking-staff," and among the items the armour attributed to De Courcy,—

"Armour cappape of ye Lord Corseys white and parcell guilt."

Also, the "Champion targett and launce of King Charles II.," and "Old wooden shields, whereof two said to be King Henry the 7ths, and the other Charles Brandons, Duke of Suffolke."

About this time armour falling into disuse the stores were returned into the Tower by the different corps of the army and have never since been called for. Particulars of the stores are set forth in the rough draft of a survey made in 1697. It opens with an imposing list of "Harquebus Armor Ordnary," followed by others of "Harquebus Strong," "Curasiet Armor," "Footman's" and "Toiras Armor": these include "Backes, Brests, Head Pieces, Dutch Potts and Potts made in England."† It would seem that the equestrian figures remained as before, though this cannot be exactly ascertained, a portion of the paper being torn away. There are specified, however:—

"Statues of wood whereon s[re] faces ij carved 2
Horse statues of wood ..... 2"

These are the work of Grinling Gibbons, the "faces" being those of Kings Charles I. and Charles II.; both are in the Tower, but the head of the latter is transferred to King James II., on the equestrian figure which represents him in the cuirass and the casque, with oreillettes, which he wore at the battle of the Boyne. Augmented, probably, by a few others subsequently sent in from out-stations, the stores enumerated in the two inventories of 1675 and 1697 furnished the additional embellishments to the existing Armouries. The mounted figures were increased from ten to twenty-seven in number. The "line of kings," as it was termed, began with our old friend William the Conqueror in his impossible suit of plate armour, and finished with the Kings George I. and II.; George I. appearing in the suit of Sir Henry Lee, the veteran champion of Queen Elizabeth; and George II. in that of Edward Clinton, Earl of Lincoln, A.D. 1535. King Edward I. masquerades in gilt armour, and James I. in a tilting suit that indubitably belonged to Robert Dudley Earl of Leicester; whilst King Henry VIII. was encased in John of Gaunt's. A figure clad in a beautifully-arabesqued English suit of russet armour of King Edward VI.'s time, bestrode a horse encased in a suit, embossed with the striking-iron and pomegranate,—the badges of Burgundy and Granada,—which was presented by the Archduke Philip of Flanders to King Henry VII. The group was shown as Edward the Black Prince. Moreover, by way of anti-climax, King Henry V. had exchanged to William III. the suit he wore at Creçy for one made up of those belonging to Kings Charles I. and Henry VII. Absurdities of this kind leading the less well-informed to picture to themselves the heroes of Senlac as men-at-arms of the Tudors, cavaliers as equipped for the Wars of the Roses, were rendered more obvious upon the appearance of Sir Samuel Meyrick's "Critical Inquiry into Ancient Armour." His advice and co-operation were secured; in 1826 the ancient Cold Harbour Gate was removed, and a Horse Armoury built against the southern wall of the White Tower. At the same time the misnomer of Spanish Armoury yielded to the title of Queen Elizabeth's Armoury, since most of the latter collection was made during the sixteenth century. John of Gaunt, De Courcy and others were taken down from their wooden destriers, Sir Samuel Meyrick reclassified the various exhibits, and in the year 1869 at the hands of the late Mr. Planché the whole collection assumed the shape which is familiar to most of our readers. It will be remembered as conspicuous for the picturesque line of horsemen ranged beneath the house colours of the several dynasties, the two coloured wood-carvings, known as "Gin" and "Beer," on the staircase,—relics from the Greenwich Palace buttery,—and for the tawdry, Tussaud-like group of Queen Elizabeth and a page, which stood in the Queen's Armoury facing the stairs made through the eastern wall of the White Tower. She is represented as riding to St. Paul's to offer thanks for the defeat of the Armada, though she was carried thither in a coach,—one of the first seen in England.

The two armouries are now being regrouped in the Council Chamber and room forming the top floor of the White Tower; but the old order is destroyed owing to the shape of the two new show-rooms. The vestibule communicating with the Horse and Queen's Armouries, which was built in 1851 after the plans of W. Stacey, Ordnance Store-keeper, is happily demolished. By the removal of the panelling, with other changes, its original condition is restored to the upper crypt of St. John's Chapel (Queen Elizabeth's Armoury). It is in the north party-wall of this apartment that the dark chamber is built known as the "Little Ease," and shown as the bed-chamber of Sir Walter Raleigh. Made a captive on three several occasions, his second and longest imprisonment extended over sixteen years. During this period the brightest jewel of his sovereign's crown was confined in the Bloody Tower,* and here his son Carew was born. Here, too, whilst engaged upon chemical experiments and his "History of the World," he received the visits of his friends including Ben Jonson, and the Prince Henry who averred that no man but his father would keep such a bird mewed in such a cage. He would work and cultivate rare plants in the adjoining Constable's garden; the narrow walk upon the wall connected with this tower, by which the murderers Miles Forest and John Dighton approached the princes, is yet styled Raleigh's Walk. The second crypt of the chapel is also cleaned and opened to inspection. Below the ground level, it is entered through the dungeons into which More and Fisher,—shortly to be canonised by the Roman Church,—were thrown, and where remain traces of the rack that tortured Anne Askew, Guy Faux, and the coin-adulterating Jews.

Visitors now enter the chapel by the flight of steps made in the southern wall of the White Tower, at the foot of which the remains of the murdered princes were found. A well, in good preservation, has just been discovered within the keep, by the south-western turret.

Along the eastern side of the White Tower, adjoining the circular turret, once occupied by Flamstead, there formerly stood a large storehouse, flanked with two castellated buildings of Edward III.'s time. The area between the White Tower, the Wakefield, Salt (Assault) and Broad Arrow Towers was occupied by the palace, its gardens and offices. The Queen's private lodging and garden adjoined the Salt Tower at the south-eastern angle of the Inner Ward; the Queen's Apartments and Gallery lay to the west, their site now occupied by the doomed Ordnance Buildings. In the middle space near the Wardrobe Tower, King Henry III. erected his banqueting-hall; another large hall abutted on the Wakefield, for some time termed the Hall, Tower.* In this, the favourite palace of the Plantagenets and Tudors, John, King of France and his son Philip, entertained their conqueror. Another royal captive, Charles Duke of Orleans, father by his third wife of Louis XII., wrote here the English poem which, preserved in the British Museum, contains the earliest known view of the Tower. Hither Bruce, King of Scotland, was led prisoner by Edward's heroic queen; and here according to Froissart, Richard II. resigned his crown to Bolingbroke: though this episode is by some laid in the Council Chamber of the White Tower; by others, in the Refectory, now the scholars' dining-room, at Westminster. From the scene of the magnificent wedding festivities of Eleanor of Provence and Henry III., the daughter of Edward IV. and queen of Henry VII. started to be crowned in the Western Minster; and here the brides of King Henry VIII. were royally received. In the Great Hall was arraigned his second victim, who but three years before had landed from Greenwich at the Water Gate, "amidst the great melody of trumpets and divers instruments, and a mighty peal of guns." In the palace she, whose name is carved in the prison-lodging of the Beauchamp Tower, lived a nine days' Queen, and her successor kept court. Well might Elizabeth, passing the Bell Tower on her entry as queen, alight from her horse and reverently thank God for her past deliverance from its cell, and refuse to make that a palace which had been her prison. At the coronation of King Charles II. was observed for the last time the ancient custom, established by Henry IV., of proceeding in state from the Queen's Stairs to Westminster. For this occasion they made the St. Edward's crown to replace that of the Confessor broken up by the Commonwealth men. This is the crown which Blood nearly succeeded in carrying away, and was used at each subsequent coronation except that of her Majesty. The Regalia is now deposited in the Wakefield Tower, where a case containing the insignia of the Thistle fills the recess in which King Henry VII.'s body was found. After Charles II.'s time the palace fell into disuse as a royal abode; the southern precincts were occupied by a large storehouse which, burnt in 1789, made way for the huge and unsightly structure now being demolished. So desirable a measure accords with a scheme of the late Prince Consort for restoring to the Tower and its precincts somewhat of their ancient character. In a few weeks the remains of the Lantern Tower and Inner rampart beneath the Ordnance-house will be brought to view. The central keep should stand forth in solitary grandeur no longer for the awe but for the admiration of citizens. It is to be hoped that the guard-house with the unsightly Horse Armoury will not be spared, and that we may thus regain the former prospect from the river of that White Tower where Gundulph laid in tears the foundation of a fortress which was to be the scene of so much suffering.

Other modifications harmonise but ill with the time-honoured associations of the Tower. The warders (officially styled yeomen gaolers and porters) no longer wear the picturesque costume of the Yeomen of the Guard to King Henry VIII. That dress was secured for them by the Duke of Somerset on his release in the reign of King Edward VI. in recognition of their "dayly and diligent attendance." The garrison chapel, dedicated appositely enough to St. Peter in bonds, is denuded of its galleries and high-backed pews; two old entrances are filled in, plaster and stucco are laid about with no illiberal hand. In the course of excavations four or five years ago some deal boxes were disinterred, containing remains of state victims. Across the nave floor lay a body pronounced by competent judges to be that of a woman advanced

* Plate armour was not worn before the end of the fourteenth century.

† The harquebus (*hakenbüchse*) survives in the modern cavalry carabine, worn, until the new drill, slung from the shoulder-belt. The pot was the helmet of the pikeman.

* In the room, now subdivided, on the second floor being that in which the two sons of King Edward IV. were murdered. This was known as the Garden Tower until the middle of the sixteenth century.

* The lower portions of the Wakefield, St. Thomas's (Traitor's Gate), and Salt Towers are of William Rufus's time, and are splendid examples of early masonry.

ih years, being, in fact, the venerable Countess of Salisbury, last in whole blood of the Plantagenets. Close by they discovered the bones of a man of great size and stature, answering to the description of John Dudley, Duke of Northumberland, father-in-law to Lady Jane Grey. It was at first doubted whether this was really he, since the head was found as well, but a search in the Tower records showed that in his case the usual exhibition of the head at London Bridge had been dispensed with. Next to Dudley, and near the altar beneath which the Duke of Monmouth is buried, lay the relics of an arrow-chest containing the mouldering skeleton of a young and delicately-fashioned woman. Careful scrutiny demonstrated that here was the "lyatel necke" which Anne Boleyn told the headsman would give him small trouble. The remains were placed in leaden caskets labelled with the names of their respective owners. But the chapel as now restored and refitted has a cold and untoward aspect opposed to the emotions which its history justly inspires. Something more becoming than an ugly heraldic pavement emblazoned in black and white marble could assuredly have been devised to indicate their last resting-places whose diverse lives and common fate illustrate the oft-pointed moral of fallen greatness and blighted fame.

W. E. Milliken.

BELOW BRIDGE BRIDGES.

The reports of the City Architect, and of the City Engineer, on the question of the below-bridge passage of the Thames, have been issued, we learn. In one point these gentlemen agree with the Engineer of the Metropolitan Board of Works,—but in one point only,—they think a crossing is desirable. As to that, in the abstract, perhaps, few persons will differ. The difficulty arises when we come to discuss the method, and to count the cost. As to this, the ratepayers may certainly be advised to insist on an accord being arrived at among the engineers before they are pledged to pay a single penny.

The City advisers hold with ourselves that the difficulty of the approaches to either a high-level bridge or a tunnel are so great that it is not to be expected that any traffic, in any way proportionate to the cost of the new viaduct, would cross it. Each gentleman advises a bridge on the ordinary level,—one thinking that it should be a swing-bridge, another that it should be a bridge pure and simple,—wharf-owners being compensated for the keeping masted vessels below it. On this we have not the data at the moment for forming any opinion. We have no doubt that much more traffic would cross a swing bridge than a high-level bridge, and that, again, much more would use a permanent bridge than a swing bridge. But before saddling the ratepayers with millions of money, these points ought to be taken out of the province of opinion into that of statistical fact. We recently showed the results of one mode of arithmetical calcula applied to the subject. Why not carry the same investigation a little further? Above all, why not tell us what use was made of the steam-ferry, and what is the number of passengers now using the two existing tunnels? It is a significant fact that no notice is taken of these points by the Metropolitan Board of Works. The confidence which those authorities entertain that the ratepayers *must* find, without demur, such sum as they may demand, for such crossing as they may prefer, is strikingly shown by the use made (as we before mentioned) of the returns actually made. The case put forward by the Metropolitan Board of Works for a new bridge is based on the erroneous assumption that out of 384,000 pedestrians who cross fourteen metropolitan bridges in a day, 332,000 go over Hammersmith, Battersea, and the intervening bridges. A slip of the pen, no doubt, only it is on this very slip that the argument in favour of a vast outlay is based. Sir Joseph Bazalgette has not availed himself of the opportunity afforded him by our former remarks to give any explanation of his figures. We take it for certain that Mr. Jones and Mr. Haywood have something definite to show in the way of figures; but we are anxious to have the real and full statistics of all the attempted eastward portions of the Thames brought before the world.

And here we must say that we think the public are entitled to demand an accord among experts before they part with a penny. Three advisers counsel three different modes. If a fourth were called in he would probably be strong for a tunnel. Much as we admire the independence of the engineers of this country, we cannot but think that it would be better in such a case to adopt the Italian method, and to decide by a council of experts on the main features of a new engineering project, than to let every man fight for his own hand, so that, out of three professional men, no two agree on any point, except that the proposals of the third are totally inadmissible. As to this, every pair agree as against every third.

If it be not thought worth while to do the best that can be done with a steam ferry, while the engineers are making up their minds as to the best mode of crossing, it can only be because there is a shrewd guess that the small use that would be made of the ferry would be conclusive as to the small use that would be made of the bridge.

A HISTORY OF WALL PAPER.

The seventh exhibition of the Central Union of Arts applied to Industry has conveyed some useful facts to the minds of the public with respect to the trade and manufacture of wall-papers. The Central Union is making every effort to do for French industry what South Kensington has achieved in England. Its organ, the *Revue des Arts Décoratifs*, basing its observations on this year's exhibition, held at the Palais de l'Industrie, gives us a good insight into the development of this trade throughout France. Without, however, going into all the elaborate details spread before us in the course of this lengthy and technical history, there are a few facts that may be of interest to English readers. First, we could not but note that the foundations of this industry were laid by Englishmen. Great and just as is the praise which has always been accorded to France for her skill in applying the arts to industry, we must in our own honour recall the French proverb, *Ce n'est que le premier pas qui coûte*. This "first step," though the most difficult of all, was taken by an Englishman, at least, so far as Paris is concerned. The manufacture of wall-papers was commenced at a comparatively recent date in France. The first record is that of a factory established at Rouen, in 1610, by Le François; but this was combined with the printing of pictures and the illumination of vellum, parchment, &c. Traces of wall-papers are to be found at Lyons, Orleans, Macon, and other towns, but these are not typical of a *bonâ fide* industry. They are isolated cases, where certain persons unable to imitate the Paris fashion of painting the walls of their houses, pasted paper of a more or less decorative character over them. The people who supplied such paper did not make a regular trade of the article. It was looked upon as an exceptional contrivance, adopted by a few persons whose means did not allow them to use paint, according to the fashion. But in the *Géographe Parisien* of 1769 an announcement will be found, to the following effect:—"An Englishman, Mr. Lancake, has obtained from the king the permission to establish at Carrière, near Paris, a manufactory of wall painted paper, of painted prints for furniture, and all sorts of tissues. The general warehouse is in the Rue Saint Antoine, opposite the stores of Geoffroi-Lasnier, and the public will find the wherewithal to satisfy its taste."

Some years later another similar advertisement will be found in the *Almanach du Voyageur à Paris*. This time it is the firm of Windor, Father, Son, & Co., who announce that they have undertaken to manufacture papers for covering walls, reproducing some of the finest arabesques of Italy, and others, we are told, are elaborately gilt, and all very handsome. The initiative thus taken, French manufacturers were not slow to follow the example; and, by applying their knowledge of art and their innate good taste to this new product soon won a high reputation. Political events also contributed to give publicity to the new trade. M. Réveillon, a manufacturer of wall-paper, who is described by M. Thiers, in his history of the French revolution, as having created, by dint of his industry and ability, "vast workshops where he was perfecting the national manufactures and gave employment to 300 workmen, was accused of seeking to reduce by half the salaries he was in the habit of paying." The rest of the story is familiar to readers of history, who know that the murder of M. Réveillon, the sacking and burning of his house on April 27th, 1789, was one of the first acts of violence on the part of the mob which heralded the coming revolution.

Réveillon was certainly one of the first, and evidently at that time the most successful, of paper-painters; but his name and the nature of his trade will ever be associated with the record of the first outbreak of revolutionary violence. Many specimens, fortunately, still remain of his work. They are distinguished by their life, gaiety, elegance, recalling at times the Pompadour stuffs. By his papers he replaced the panelling, frieze, and other decorations, and secured, for this purpose, the services of the most talented designers of the day, such as Desrais, Prieur, Jean Baptiste, Fay, Huet, &c. By obtaining the collaboration of these artists, he disarmed opposition; no one could say that his papers were not most artistic. One of Réveillon's papers, printed in 1788, and designed by Prieur, is especially graceful, and all students of this subject will be particularly gratified to find that such precious relics have been preserved by *L'Union Central*. Réveillon was succeeded immediately by Jacquemart, who at first imitated his predecessor; but he had soon to yield to the influence which the painter David exercised over art. Like all the other sections of society, he had to sacrifice to the Greeks and the Romans.

Dufour, from Macon, who had followed the traditions left by Réveillon, came to Paris in 1807, but he was overcome by the bad taste that prevailed during the Imperial *régime*, and his productions were cold and pretentious,—more heavy than imposing. Some curious specimens of this artistic decadence are exhibited. The bad taste, after all, was but in harmony with all the surrounding circumstances; the firm was capable of some good work, as illustrated by a design dated 1814, drawn by Lafitte, painted by Madère, representing Psyche sacrificing to Venus. There are also some good specimens of the work of the firm of Cartulat-Simon, that existed from 1809 to 1835.

In 1830 a revolution was at last accomplished in this trade. Dauptain junior, whose father had founded an important firm in 1811, had the courage to abandon the stiff and unpleasant styles of the Empire and Restoration. In their stead he introduced a great variety of styles. The artist Martin supplied him with Arab and Moorish designs; then Aimé Chenavard gave him a number of comic sketches; while Poterlet brought his brilliant and quick imagination to the service of the firm. Stuff, documents, illuminations of the Middle Ages, the Renaissance, the seventeenth and eighteenth centuries were eagerly disinterred, and even Pompeian art was freely copied. As, at the same time, the means of manufacture, the mechanical appliances, the size of the workshops, had all been greatly improved, the firm was fully able to suddenly carry out these great changes. M. Dauptain had also carefully studied chemistry, and hence science, industry, and art all combined to rid France of the incubus that had weighed on it so long. This proved a death-blow to the Imperial style. The wall-papers of Dauptain soon acquired the highest reputation, and every firm sought to imitate his bold initiative. He had succeeded in creating a new school. After Dauptain came the artistic struggles between the rival firms of Délicourt and Défossé, to which the enormous progress achieved by this industry from 1850 to 1860 may be in the main attributed. In the wake of these valiant champions followed Genoux, Bezault, Riollot, and many others.

From a technical point of view, there are two dates which are landmarks in the history of this trade. In 1835 the continuous or endless sheet of paper was invented, and in 1852 the machine was introduced. By these two inventions the cost of production was reduced to an unhoped for extent. In a country such as France, where wealth is more evenly diffused and large fortunes are comparatively rare, cheapness is especially essential. At the same time, art is not improved by the cramping influence of machinery. Great, therefore, have been the disputes that have arisen as to the evil influences resulting from the use of machinery. It is urged that art is murdered by the bad taste introduced by mechanical processes. On the other hand, the manufacturers argue that purchasers would be repelled if the trade did not avail itself to the full

of all the advantages derived from modern appliances. Unfortunately, both these arguments are true, and unless the manufacturers display great public spirit, and some disinterestedness, the trade is likely to degenerate. True artists must be employed in the work, and they must seek by ingenious contrivances to impart to mechanical production an artistic stamp. Art for art's sake is but a hollow cry when applied to the decorative arts; for art is of little practical value unless it can be made to apply to the things of everyday life.

By the aid of such exhibitions as those which have just been held, this end will be more readily attained; and the display of specimens of the best work, from the earliest record of the trade down to the present day, must be of great and suggestive value to designers, artists, and manufacturers.

ICONOCLASTIC VANDALISM IN FRANCE.

Whenever there has been a change of dynasty or alteration of the form of government in France, one of the first "reforms" to be carried out has ever been the changing of the names of a considerable number of streets in the principal cities of the country. Any *rue*, *avenue*, or *place*, bearing a name derived from the leading personages or events connected with the *régime* last abolished is re-christened with a title agreeable to the form of Government which has displaced it. Proceedings of this sort are childish enough, but they do little or no harm. They are calculated to raise a smile of contemptuous pity on the countenance of an impartial observer; but except as being comical manifestations of a kind of feminine spite and undignified bitterness unworthy of a great nation, such incidents do no permanent injury. But the deeds of the Commune, the throwing down of the Vendôme Column, and the application of petroleum to the destruction of some of the finest buildings in Paris, are only the outcome of a more virulent form of the same spirit of barbarous ignorance and malice. Against any repetition of these acts of violence it is but natural that every lover of art and architecture throughout the world should raise his voice in indignant condemnation. The events which have been taking place recently in connexion with the agitation among the mining population of Montceau-les-Mines and the anarchists of Lyons, unfortunately show that a certain political party in France is still capable of the most atrocious and savage acts of Vandalism. The anarchists with their dynamite have proved themselves not only enemies of architecture and art, but of human society itself. This latter part of the subject we leave for others to deal with. In these columns we must be content to record some of the facts which have come to light in proof of the iconoclastic mania of the newest school of French anarchists. At Montceau-les-Mines, the Vandalism of the agitators was directed against such images of the Virgin and such representations of the Crucifixion as they could lay hands on. These objects, it turns out, were first bored with regular blasting instruments and then shattered to pieces with charges of dynamite. With respect to the outrage in Lyons, where the anarchists employed dynamite to blow up a *café* resorted to by persons whom they disliked, it has been shown that the act had been contemplated for some time, and was in fact, foretold in one of the revolutionary organs more than six months ago.

That such deeds of barbarism can be perpetrated even by the very lowest class in France is a fact of the greatest gravity. But there are those belonging to higher classes who are hardly less guilty than the most violent of the extreme revolutionaries. It is a fact that for some time past many men among the more respectable sections of the Republicans have been urging the Government to undertake what has been called a "purification" of the public statues throughout France. These more moderate Republicans desire to have their own heroes honoured in this form, but not content with obtaining permission to erect statues to those whom they admire, they demand that the authorities shall remove or destroy all the monuments erected to the heroes of the Royalists, Legitimists, Orleanists, and Bonapartists. The Republicans, as we have above hinted, have already substituted Republican for Royalist and Imperialist names of streets, roads, and places. Now they go further, and for a couple of years past they have been importuning the Minister of Education to do away with any statues except those whose originals the parties at present in the ascendant recognise as having been patriots.

Hitherto the Government has not given way. But the question is, will it be able, in the long run, effectually to resist the importunities of its supporters? There are about three thousand public statues in France, and three-fourths of these even respectable Republicans wish to have thrown down and destroyed. As the Ministry has not yet made up its mind to yield to the iconoclasts, the mob is beginning to take the work into its own hands. Some time ago an attempt was made to blow up the statue to Thiers at St. Germain. Soon after, the fountain of St. Sulpice, which is adorned with figures in stone of France's greatest pulpit-orators,—Fénélon, Bossuet, Fléchier, and Massillon,—was threatened with destruction. Upon the fountain the agent of a secret committee had written the sentence passed by that occult organisation condemning all these figures to destruction by dynamite, and the fact that this has not yet been carried out is solely attributable to the unceasing vigilance of the police. On the other hand, in some quarters the authorities have been, to a certain extent, yielding to the narrow prejudices of the iconoclasts. Thus the *Maire* of Caen caused the statue of Louis XIV., which stood on the Place Royal, to be removed. Fortunately, in this instance, the outcry of the local opponents of the act was powerful enough to induce the *Maire* to refrain from destroying the statue, and in ultimately compelling him to set the statue up again in a less prominent spot. Again, the Town Council of Marseilles has passed a resolution requiring the removal of the statue of Bishop Belzunce. The decision has met with no opposition. It is attributable purely to a blind hatred of everything connected with the Church and priesthood. The fact that Bishop Belzunce has had a statue erected to his memory, chiefly in consequence of his heroic self-devotion to the wants of the Marseillais victims of the terrible plague of 1720, has had no weight with the fanatic anti-religious and iconoclastic politicians of the present day.

When such is the conduct of official personages and corporations, the Vandalism of the ignorant and fanatical anarchists of Montceau-les-Mines is hardly to be wondered at. Altogether, for the lover of art, the present state of feeling amongst large classes of Frenchmen with regard to their national monuments is one of the most depressing facts of contemporary history.

THE USE AND ABUSE OF SCREWS IN WOOD WORK.

Archimedes is credited with the invention of the screw, but whether the famous geometrician's labours extended much further than the enunciation of the scientific principles and the mechanical power of the screw, it is difficult to say. If he made a screw, he certainly must have tried its effect, and was probably well satisfied with its performance, for in the whole range of mechanical appliances in the constructive arts there is not a more useful article than the screw. Archimedes is further reported to have said, "Give me a prop, a position, and a lever strong enough, and I will move the world," and, no doubt, if these conditions could be granted to him, he, as well as others after him, could lift the earth, or aught upon the earth, by a combination of the tremendous lifting and driving powers exercised by a series of screws, apart from the lever. Screws are various, and of various sizes, forms, and materials, but the same principle runs through them all, whether they be manufactured for use in metal or woodwork, or for exerting a lifting, driving, or pressing power separately. Our object here is not to treat of screw-cutting, but rather screw-driving in woodwork, and to throw out some useful hints to the building constituency, and particularly workmen. The use and abuse of screws is a matter of importance to architects, builders, and their clients, for it is according to the way screws may be applied in several building and kindred operations that good or bad workmanship will be evidenced.

Screws are more extensively used than formerly in putting together various kinds of wood framing, and even in cabinet and chair work screws are pressed into service in places where their use would not have been tolerated by manufacturers in the earlier portion of the present century. Although their existence is generally concealed in furniture and fancy work, they are often present, nevertheless, and too often they are used as a substitute for dowels, dovetails, and tenons, in the manufacture of cheap work. It is an instructive and remarkable fact that our building workmen of a century or two back, in many operations in carpentry and joinery, discarded, as far as was possible, the use of nails or screws, depending more on carefully-jointed work, put together by means of mortise, tenon, dovetail, hard-wood dowel, or oaken pin. Their work might have taken a longer time to execute than that done by our present race of joiners and woodworkers, but it was infinitely more lasting, and kept together so long as the timber or wood continued sound. The nearly universal remedy now for every broken article on the part of the jobbing joiner and cabinet-maker is to repair it with the aid of a nail or a screw. Glue is even often dispensed with, or used where it will exercise little sustaining power, and coloured putty is not only made to cover the heads of sunken nails and screws on the face of a piece of work, but used also to hide bad joints and workmanship. Some years ago the writer examined an old oaken staircase and hand-rail in a college, which work was executed more than two centuries since, and in the construction of which not a nail or a screw was used. From time to time, over long years, some slight repairs were made, but the workmen during their operations were never able to discover that a nail had been used in the original construction. There were mortises and tenons, grooves and tonguing, wooden pins or dowel work, but no iron fastening of any kind. The writer also examined more than one old roof in which the use of iron spikes, nails, and other iron fastenings was dispensed with, and the joining of the timber was effected without their aid. In the hinging of doors and other framework it is necessary to use screws, but, unfortunately, many workmen, if not watched or cautioned, will not do the screwing properly or in a workmanlike manner. In deal, pine, and other soft woods a bradawl is sufficient to make an opening for the screw, which opening, of course, should be less than the thickness of the body, and short of the length of the screws used. It will be found, however, that most workmen, not content with tapping the screw a fourth of an inch or so to give it a hold before applying the screw-driver, will actually drive the screw into the wood two-thirds of its length with the hammer. This the workmen will do to save themselves trouble. If there be two hinges upon a door, and if each hinge has eight screw-holes,—four in each plate,—the chances are that the workmen will drive half of the screws nearly home in the door-stile and frame with his hammer rather than take the trouble of driving them gradually home with the screwdriver. Hence, if the door be a massive or heavy one, the weight of it will tend to the hinges loosening, and after a time will follow a train of other ills,—the "dragging" and "rubbing" of doors, and their makeshift cure in what is known as "easing" them. If remonstrated with for driving a screw nearly home with the hammer, the workman may probably say (as some workmen certainly think) that a few turns of the screw in the wood are sufficient. This is an erroneous and mischievous idea. A screw that is nearly driven its whole length with a hammer cannot make a regular and corresponding thread or spiral in the wood, and therefore its binding and maintaining power in keeping the hinge in its place is all but gone. Workmen should be made to drive every screw home gradually with the screw-driver, and not only an odd one. In hard-wood operations as well as in soft woods, particularly in hinge work, screws should be properly driven, and the aperture or opening made for the passage of the screw should be much less than the thickness of the screw to be driven. The screw will bite a sufficient passage for itself. In hard wood, however, it is necessary to give a little more freedom of entry to the screw than in soft wood, and a gimlet is needed for making the suitable opening instead of the bradawl.

A difficulty is often experienced by persons who wish to withdraw a screw, by finding that though it will turn round under the application of the screw-driver, yet it will not unscrew

ont. In this case a well-grounded suspicion may be entertained that the screw in question was driven, or nearly driven, home originally by the hammer, instead of gradually by the screw-driver, and that no regular thread corresponding with the screw exists in the wood. Under such circumstances it becomes necessary often to wrench off the hinge or hinges by force, at the risk of their breaking, and this often happens. When hinges have lain undisturbed for long years on old doors or other framings, perhaps for a quarter of a century or double that time, it becomes difficult to extract the screws, although they may have been originally properly driven. This arises from the screws rusting in the wood and sometimes from other causes. Workmen themselves often fail to withdraw a screw, and are forced to break the hinge to enable them to get under the head of the screw, and wrench it out. They often split, and break too, fancy and delicate wood-work articles in their efforts to take off hinges, locks, mountings, and other finishings, despite that simple methods exist for extracting screws that have rusted in the wood. One of the most simple and readiest methods for loosening a rusted screw is to apply heat to the head of the screw. A small bar or rod of iron, flat at the end, if reddened in the fire and applied for a couple or three minutes to the head of the rusted screw will, as soon as it heats the screw, render its withdrawal as easy by the screw-driver as if it was only a recently-inserted screw. As there is a kitchen poker in every house, that instrument, if heated at its extremity, and applied for a few minutes to the head of the screw or screws, will do the required work of lossening, and an ordinary screw-driver will do the rest without causing the least damage, trouble, or vexation of spirit. In all work above the common kind, where it is necessary to use screws, and particularly in hinge-work and mountings, fancy fastenings and appliances affixed to joinery or furniture work, we would advise the oiling of screws or the dipping their points in grease before driving them. This will render them more easy to drive and also to withdraw, and it will undoubtedly retard for a longer time the action of rusting.

As matters obtain now in carpentery, joinery, furniture, and other wood workmanship, with regard to screws, although they cannot be dispensed with, yet it would be advisable in sundry classes of woodwork to minimise their use, and in other cases to do without them altogether. They can seldom be used with advantage to the displacement of mortise and tenon or good dovetail or dowel work. The growing practice of putting together woodwork with screws bespeaks a decadence of skilled labour, and of nails and screws there are far too many pressed into service in our workshops and dwellings. While admitting the usefulness of the screw in various ways, we have here endeavoured briefly to show its abuse in woodwork, and at the same time to afford some hints for better methods of procedure in building and kindred workmanship.

THE BRAZILIAN EXHIBITION AT BERLIN.

In the extensive apartments belonging to the Club House of the Berlin Architects an interesting exhibition of Brazilian products has recently been opened. The various collections present a vivid picture of the vegetable, animal, and mineral wealth of tropical South America. The walls are covered with the skins of panthers, pumas, jaguars, coatis, opossums, and ant bears, grotesquely or artistically grouped together, or combined with richly-carved Indian weapons, bows, arrows, and quivers, and various ornaments, such as necklaces of teeth, wooden combs, &c. There are also fine examples of Brazilian vegetation, including palm trees, giant grasses, mosses, and the great creeping plants of the primæval forest. In the more strictly commercial department of the Exhibition, the special section devoted to coffee is beyond question the most striking and important. Here we find a great pyramid, which illustrates in the clearest manner the total annual coffee production of all the tropical countries and the relative share of each. The base of the pyramid is a cube representing the grand yearly total, amounting to 615,711,200 kilogrammes. Immediately above this comes the block representing the proportion of the whole produced by Brazil, and amounting to 300,000,000 kilogrammes. Next come the Dutch colonies in the East Indies, and then Venezuela, Ceylon, Haiti, &c., each being represented by a proportional block rising one above another in diminishing scale. Another portion of the Coffee Exhibition presents us with the actual article itself, of which we find here no fewer than 200 varieties. Another section of the Exhibition is devoted to sugar, with specimens of the Brazilian sugar-cane and cane sugar. Close to this are samples of sugar, brandy, and rum, and further on the Paraguayan tea called *Cha do matté*. The exhibition of Brazilian timber and dye-woods is also very complete and interesting. Especially notable are the Ipé wood from Pernambuco and the cedars from Sao Bento. Other sections are devoted to different sorts of cotton, wines from Campo Bom, orange wine, malt, cocoons and silkworms, with some very beautiful raw silk, white and yellow, and a great variety of fruits and seeds. The department of preserved fruits is very extensive, and includes many varieties almost unknown in Europe. The section devoted to fibres adapted for spinning cord or rope-making is also very important. There is, in addition, an immense variety of miscellaneous articles which we have no space to mention, and among which we can only note the bricks and tiles of Pernambuco, and a complete earthenware stove from the latter place. An interesting collection of articles had been sent for the ethnological section, but many of them were lost through shipwreck on the way to Europe, especially a collection of primæval earthenware vessels. However, the Exhibition still shows a curious collection of objects of the Stone Age of the Brazils, including stone weapons, arrow and axe heads, as well as some stone plates. Altogether, the Exhibition is one of singular interest, and is well adapted to forward the object of the Berlin Society for the Study of Commercial Geography and of the Berlin architects, who have brought it together, viz., to promote the extension of trade between Brazil and Europe.

THE EXAMINATION OF PORTLAND CEMENT.

Considering the interest which the question of the adulteration of Portland cement has lately aroused, it will be useful to briefly quote a valuable article on the subject which appears in a recent issue of the *Annales des Ponts et Chaussées*. After an introduction in which reference is made to the importance of examining every description of cement before it is used, numerous analyses are cited, showing the composition and the causes of the hardening of cement, of which the following are the most noteworthy, as supplying a comparison between French, English, and German cements, viz. :—

a. French Cements.

	Lime.	Silica.	Alumina.	Oxide of Iron.	Sulphuric Acid.	Magnesia.	Water, &c.
First sample...	61·20	23·82	8·09	3·28	1·17	Trace	2·44
Second sample	60·85	23·70	9·83	2·75	1·00	Trace	1·87
Third sample	59·40	24·10	7·20	3·35	0·55	0·95	4·45

b. English Cements.

First sample...	61·72	23·07	8·55	3·25	1·45	Trace	1·96
Second sample	63·00	21·35	8·55	2·70	0·65	0·45	3·30
Third sample	58·29	20·56	6·20	6·76	1·62	0·32	5·79

c. German Cements.

First sample...	62·68	23·29	5·43	2·47	1·03	1·10	3·44
Second sample	63·21	22·82	2·69	3·52	1·12	3·00	3·95
Third sample	63·27	19·80	6·73	3·22	1·08	2·02	3·84

With the increase of lime up to a certain degree, the liability of the mixture to sinter declines, the hardening requires a higher temperature, the product gets harder, and furnishes a cement of greater resistance. A great value is to be placed upon the presence of magnesia, and the excellence of German cement is partly due to the higher percentage of magnesia, as seen from the above table. One of the most essential conditions of the successful production of cement is a careful composition of the parts. In this respect the German mode of manufacture is favourably referred to, and manufacturers are cautioned against leaving the composition to the practice and experience of the workmen. Wherever large quantities of cement are to be used, it is essential to inquire into the care exercised in the manufactories in the composition.

As regards the removal of the cement from the kiln, it is pointed out how necessary it is to keep the hard and badly-burned stones carefully separate; cement turning into a fine powder in cooling is totally unfit for use, and must be rejected. The cause of this disintegration is a superabundance of alumina. In order to save the mills, manufacturers employ a coarse grain for hard-burned cement; but a fine grain should be insisted on, because coarse pieces of hard cement act in the mixture like sand. In receiving and using cement, care must be taken that it is not too fresh. It is a mistake on the part of manufacturers to pack fresh cement at once in barrels or sacks. Cement, when finished, must be left exposed to the air for some time, in order to allow of the excess of quicklime to slake itself. English cement manufacturers pay great attention to this point, and leave the fresh cement spread in thin layers for some time.

The microscopical examination of cement with regard to its quality is highly recommended, because it enables us to discover foreign ingredients, especially the presence of blast-furnace cinder. But it is difficult to carry on microscopical as well as chemical examinations on building sites, independent of the consideration that it is impossible to recommend a certain composition as the best. It is to be recommended to examine cement for its weight and its density, for cements are proved to be better the denser they are. The difficulty of the examination consists in determining the comparative density of various descriptions of cement. In supplying the large quantities for the harbour works at Boulogne, the rule was laid down that the cement must contain no more than one per cent. of sulphate of lime. Further numerous data on the effect of the fineness of cement, practical experiments, determination of time required for setting, production of test pieces, experiments as to strength, and the effect of age on the resistance of cement, make the paper to which we have referred one of the most complete on the subject. The writer is M. Barreau, Ingénieur des Ponts et Chaussées.

THE ADULTERATION OF PORTLAND CEMENT.

In order to discover whether cement has been adulterated with blast-furnace cinder, 5 grammes of cement are put in a glass containing 50 grammes of diluted muriatic acid (one part of pure acid and four parts of water). To prevent parts of cement settling at the bottom, the mixture must be stirred with a glass or wooden crusher. Pure cement imparts a yellowish colour to the solution, without rendering it turbid. If, on the contrary, the liquid turns turbid (milky), from the presence of suspended sulphur, while, at the same time, the yellowish tinge disappears, and a strong smell of sulphuretted hydrogen (like rotten eggs) becomes perceptible, this is an indication that blast-furnace cinder has been added. Presence of ground limestone or chalk may be detected in a similar manner. If, on pouring the diluted muriatic acid on the cement, an ebullition takes place, it is a proof of the adulteration with those substances. The greater the ebullition, the larger the addition. Pure cement does not effervesce, because no carbonate of lime is contained in it.

THE EMPLOYMENT OF TERRA COTTA IN GRECIAN ARCHITECTURE.*

The remarkable advantages which antiquarian knowledge has derived from the explorations at Olympia have become more appreciable, since the termination of the work has permitted a systematic arrangement of the objects found and the institution of a comparison between them and similar discoveries made elsewhere. Thus fragments at first sight of no apparent value often acquire an unlooked-for significance, from the fact of their throwing light upon the extent of the employment of various objects which have been from time to time found in places distant from each other.

The foregoing remarks are specially applicable to the terra cotta which was formerly used for constructive purposes. Specimens of this material have been found in more or less considerable number since the commencement of the explorations, the importance of which, from an architectural point of view, has only been recognised at a comparatively recent date.

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Although the questions involved had not been finally settled, a reference to them is appropriate in connexion with Winkelmann's treatise on the use of terra-cotta in the *geison* and roof of Greek buildings.*

At one time it was an accepted principle that in both sculpture and architecture the Greeks rejected special colouring substances, and in all cases preserved the natural colour of the material. As to both subjects, modern research has proved the unsoundness of this theory. In consequence of more careful observation during the course of explorations, traces of colouring have been noticed with certainty. Thus the conviction gains ground that the buildings themselves, as well as the reliefs and rows of statues, were coloured for ornamental purposes; and what is true of statues when used in architecture must also be considered as holding good with respect to them when they are independent works of art.

The extended acceptance which the theory hitherto current met with is ascribed to the fact that observations as to the presence or absence of colouring were made more or less accidentally by travellers, whose negative expressions were considered (though opposed to positive assertions) sufficiently capable of proof to controvert any ideas as to the original use of colouring. Besides, although traces of former colouring may have been noticeable when discoveries were made, it would, of course, be difficult to find them after some time had elapsed, particularly in the case of marble, which would in the sun rapidly lose any remains of colour in consequence of the drying which would thus be caused to take place.

It is particularly by means of the discoveries made of terra cotta that light has been thrown upon the polychromatic treatment of architectural works in ancient times. In cases where the burning in of the colours imparted considerable durability to them, observations have not been made in merely a cursory manner, but numerous specimens have been preserved, and an augmentation of the present number of them in Germany is looked for in accordance with arrangements which have been made.

The discovery of the treasure-house of Gela has had much to do with settling the various questions at issue as to the employment of terra cotta in Olympian architecture. Most of the Grecian states and colonies are supposed to have had special edifices or treasuries at Olympia, in which the sacrificial gifts brought by the inhabitants of the different states were safely kept. They were situated close to each other on the terrace on the southern declivity of the Kronion Hill, and their sites can still be traced by the foundations, though the structures themselves have long since disappeared. Yet sufficient evidence exists as to the materials of which the Gela treasure-house was composed to show that the *geison* and *sima* were not prepared in the same manner as the other stones in the building. Traces of bronze nails having been discovered in these stones at regular intervals, and specimens of painted terra-cotta work found in the immediate vicinity presenting corresponding appearances, the conclusion has been arrived at that the latter were at one time fastened to the former.

The architects who had so far elucidated the question at issue did not, however, content themselves with the progress thus achieved, but pursued their researches in other places, more particularly in Sicily. From their investigations it was satisfactorily proved that the style of architecture of the aforesaid treasure-house was similar to that usual in the district of Gela, in Sicily. It has therefore been presumed with more or less reason that the portions of the building which still exist were executed at Gela and transported to Olympia.

It was also found that other Sicilian cities contained examples of a similar kind of incrusted terra-cotta to that found at Olympia. In particular, the temples at Selinus (from which several sculptures and architectural objects are to be found in the museum of Palermo) are noteworthy for the arrangement of the numerous terra-cotta slabs, the importance of which to architectural research had not previously been fully recognised. The colours of the various slabs are not uniform, but black, red, and yellow predominate. It is conjectured that the slabs must have been re-baked after being coloured, and to this operation is ascribed the durability of the colouring substances employed. The principal ornamentation consists of a Vitruvian scroll, and an entwined ribbon pattern. Palm-leaves also occur frequently, but other designs are also met with.

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At the corner of Abchurch-lane, King William-street, the London and Provincial Fire Insurance Company are erecting an extensive block of new buildings, a portion of which is intended to be occupied by the company, whilst the upper floors will be let as offices. The buildings will have a handsome and commanding elevation in Portland stone, in which a profusion of elaborate and ornamental carving will be introduced. The frontage is 36 ft. in length, and extends to a depth of 80 ft., the height of the building, which contains five floors besides a deep basement, being 58 ft. The elevation at each angle is surmounted by two towers, rising to a height of nearly 70 ft., and above the main cornice in the central portion of the frontage there are ornamental gables. The ground and the first, second, and third floors have bold mullion windows. Immediately above the ground-floor windows is a deep projecting cornice, surmounted by a balcony. There are richly-carved panels carried across the frontage between the windows of each floor, and similarly carved panels and pilasters at each angle of the elevation. The second-floor windows are surmounted by arches, within which there is some very elaborate carving, including the arms of the company. The top floor of the building is in a high-pitched roof, covered in with sea-green slates, the towers being covered with the same material.

The main entrance to the building is in the centre of the ground-floor, the whole of which is intended to be occupied as one large apartment for the transaction of the business; and containing an area of about 2,400 ft. It will be very artistically decorated and fitted, and will be lighted by an ornamental lantern in the centre covered in from an open well, faced with white enamelled brick, from which several of the offices in the upper floors of the building will also be lighted. A considerable portion of the basement, which will also be occupied by the company, will be fitted up as a strong room. The ground-floor portion of the building will be entirely fire-proof. There will be a separate entrance at the corner of King William-street, leading, by a stone staircase, to the upper floors containing the general offices.

Messrs. Davis & Emmanuel are the architects, and Messrs. Trollope & Sons the contractors. Mr. Richards is foreman of the works. The cost of the building will be about 10,000*l.*

STAIRCASE OF THE "PUERTA ALTA," OR "CORONERIA," BURGOS CATHEDRAL.

We learn from Spanish historians that Don Juan Rodriguez de Fonseca, an eminent prelate, who resided at Burgos from 1513 to 1524, impelled by veneration for the basilica of that city, the work of Francisco de Colonia, conceived, in 1516, the idea of dismantling the staircase of the upper door, and of replacing it by a more ambitious piece of architecture. Accordingly, he had the old staircase removed, and submitted to the cathedral chapter a sketch for a new erection, drawn by a certain Diego Sylve, an artist of the time well known for his works. The project was sanctioned, as we learn from an entry made in the minutes of the chapter meeting on November 4th, 1519, and begun and completed under the prelate's supervision. As late as 1866 it was not known who was the originator of the design; and it was only then discovered by the learned author of the "Historia del Templo Catedral de Búrgos," Señor Don Manuel Martinez y Sauz, canon of the cathedral.

The staircase, of which we give an illustration in this week's *Builder*, is placed on the north side of the transept, between the chapels of San Nicolas y del Nacimiento and of the Concepcion de Nuestra Señora, and served formerly for the upper door or *coroneria*, which was closed in 1786, by order of the chapter, on account of the draught which it caused in the church. The staircase was called in the sixteenth century, and even later, *escalera de rada*

out. In this case a well-grounded suspicion may be entertained that the screw in question was driven, or nearly driven, home originally by the hammer, instead of gradually by the screw-driver, and that no regular thread corresponding with the screw exists in the wood. Under such circumstances it becomes necessary often to wrench off the hinge or hinges by force, at the risk of their breaking, and this often happens. When hinges have lain undisturbed for long years on old doors or other framings, perhaps for a quarter of a century or double that time, it becomes difficult to extract the screws, although they may have been originally properly driven. This arises from the screws rusting in the wood and sometimes from other causes. Workmen themselves often fail to withdraw a screw, and are forced to break the hinge to enable them to get under the head of the screw, and wrench it out. They often split, and break too, fancy and delicate wood-work articles in their efforts to take off hinges, locks, mountings, and other finishings, despite that simple methods exist for extracting screws that have rusted in the wood. One of the most simple and readiest methods for loosening a rusted screw is to apply heat to the head of the screw. A small bar or rod of iron, flat at the end, if reddened in the fire and applied for a couple or three minutes to the head of the rusted screw will, as soon as it heats the screw, render its withdrawal as easy by the screw-driver as if it was only a recently-inserted screw. As there is a kitchen poker in every house, that instrument, if heated at its extremity, and applied for a few minutes to the head of the screw or screws, will do the required work of loosening, and an ordinary screw-driver will do the rest without causing the least damage, trouble, or vexation of spirit. In all work above the common kind, where it is necessary to use screws, and particularly in hinge-work and mountings, fancy fastenings and appliances affixed to joinery or furniture work, we would advise the oiling of screws or the dipping their points in grease before driving them. This will render them more easy to drive and also to withdraw, and it will undoubtedly retard for a longer time the action of rusting.

As matters obtain now in carpentery, joinery, furniture, and other wood workmanship, with regard to screws, although they cannot be dispensed with, yet it would be advisable in sundry classes of woodwork to minimise their use, and in other cases to do without them altogether. They can seldom be used with advantage to the displacement of mortise and tenon or good dovetail or dowel work. The growing practice of putting together woodwork with screws bespeaks a decadence of skilled labour, and of nails and screws there are far too many pressed into service in our workshops and dwellings. While admitting the usefulness of the screw in various ways, we have here endeavoured briefly to show its abuse in woodwork, and at the same time to afford some hints for better methods of procedure in building and kindred workmanship.

THE BRAZILIAN EXHIBITION AT BERLIN.

In the extensive apartments belonging to the Club House of the Berlin Architects an interesting exhibition of Brazilian products has recently been opened. The various collections present a vivid picture of the vegetable, animal, and mineral wealth of tropical South America. The walls are covered with the skins of panthers, pumas, jaguars, coatis, opossums, and ant bears, grotesquely or artistically grouped together, or combined with richly-carved Indian weapons, bows, arrows, and quivers, and various ornaments, such as necklaces of teeth, wooden combs, &c. There are also fine examples of Brazilian vegetation, including palm trees, giant grasses, mosses, and the great creeping plants of the primæval forest. In the more strictly commercial department of the Exhibition, the special section devoted to coffee is beyond question the most striking and important. Here we find a great pyramid, which illustrates in the clearest manner the total annual coffee production of all the tropical countries and the relative share of each. The base of the pyramid is a cube representing the grand yearly total, amounting to 615,711,200 kilogrammes. Immediately above this comes the block representing the proportion of the whole produced by Brazil, and amounting to 300,000,000 kilogrammes. Next come the Dutch colonies in the East Indies, and then Venezuela, Ceylon, Haiti, &c., each being represented by a proportional block rising one above another in diminishing scale. Another portion of the Coffee Exhibition presents us with the actual article itself, of which we find here no fewer than 200 varieties. Another section of the Exhibition is devoted to sugar, with specimens of the Brazilian sugar-cane and cane sugar. Close to this are samples of sugar, brandy, and rum, and further on the Paraguayan tea called *Cha do maté*. The exhibition of Brazilian timber and dye-woods is also very complete and interesting. Especially notable are the Ipé wood from Pernambuco and the cedars from Sao Bento. Other sections are devoted to different sorts of cotton, wines from Campo Bom, orange wine, malt, cocoons and silkworms, with some very beautiful raw silk, white and yellow, and a great variety of fruits and seeds. The department of preserved fruits is very extensive, and includes many varieties almost unknown in Europe. The section devoted to fibres adapted for spinning cord or rope-making is also very important. There is, in addition, an immense variety of miscellaneous articles which we have no space to mention, and among which we can only note the bricks and tiles of Pernambuco, and a complete earthenware stove from the latter place. An interesting collection of articles had been sent for the ethnological section, but many of them were lost through shipwreck on the way to Europe, especially a collection of primæval earthenware vessels. However, the Exhibition still shows a curious collection of objects of the Stone Age of the Brazils, including stone weapons, arrow and axe heads, as well as some stone plates. Altogether, the Exhibition is one of singular interest, and is well adapted to forward the object of the Berlin Society for the Study of Commercial Geography and of the Berlin architects, who have brought it together, viz., to promote the extension of trade between Brazil and Europe.

THE EXAMINATION OF PORTLAND CEMENT.

Considering the interest which the question of the adulteration of Portland cement has lately aroused, it will be useful to briefly quote a valuable article on the subject which appears in a recent issue of the *Annales des Ponts et Chaussées*. After an introduction in which reference is made to the importance of examining every description of cement before it is used, numerous analyses are cited, showing the composition and the causes of the hardening of cement, of which the following are the most noteworthy, as supplying a comparison between French, English, and German cements, viz. :—

a. French Cements.

	Lime.	Silica.	Alumina.	Oxide of Iron.	Sulphuric Acid.	Magnesia.	Water, &c.
First sample...	61·20	23·82	8·09	3·28	1·17	Trace	2·44
Second sample	60·85	23·70	9·83	2·75	1·00	Trace	1·87
Third sample	59·40	24·10	7·20	3·35	0·55	0·95	4·45

b. English Cements.

First sample...	61·72	23·07	8·55	3·25	1·45	Trace	1·96
Second sample	63·00	21·35	8·55	2·70	0·65	0·45	3·30
Third sample	58·29	20·56	6·20	6·76	1·62	0·32	5·79

c. German Cements.

First sample...	62·68	23·29	5·43	2·47	1·03	1·10	3·44
Second sample	63·21	22·82	2·69	3·52	1·12	3·00	3·95
Third sample	63·27	19·80	6·73	3·22	1·08	2·02	3·84

With the increase of lime up to a certain degree, the liability of the mixture to sinter declines, the hardening requires a higher temperature, the product gets harder, and furnishes a cement of greater resistance. A great value is to be placed upon the presence of magnesia, and the excellence of German cement is partly due to the higher percentage of magnesia, as seen from the above table. One of the most essential conditions of the successful production of cement is a careful composition of the parts. In this respect the German mode of manufacture is favourably referred to, and manufacturers are cautioned against leaving the composition to the practice and experience of the workmen. Wherever large quantities of cement are to be used, it is essential to inquire into the care exercised in the manufactories in the composition.

As regards the removal of the cement from the kiln, it is pointed out how necessary it is to keep the hard and badly-burned stones carefully separate; cement turning into a fine powder in cooling is totally unfit for use, and must be rejected. The cause of this disintegration is a superabundance of alumina. In order to save the mills, manufacturers employ a coarse grain for hard-burned cement; but a fine grain should be insisted on, because coarse pieces of hard cement act in the mixture like sand. In receiving and using cement, care must be taken that it is not too fresh. It is a mistake on the part of manufacturers to pack fresh cement at once in barrels or sacks. Cement, when finished, must be left exposed to the air for some time, in order to allow of the excess of quicklime to slake itself. English cement manufacturers pay great attention to this point, and leave the fresh cement spread in thin layers for some time.

The microscopical examination of cement with regard to its quality is highly recommended, because it enables us to discover foreign ingredients, especially the presence of blast-furnace cinder. But it is difficult to carry on microscopical as well as chemical examinations on building sites, independent of the consideration that it is impossible to recommend a certain composition as the best. It is to be recommended to examine cement for its weight and its density, for cements are proved to be better the denser they are. The difficulty of the examination consists in determining the comparative density of various descriptions of cement. In supplying the large quantities for the harbour works at Boulogne, the rule was laid down that the cement must contain no more than one per cent. of sulphate of lime. Further numerous data on the effect of the fineness of cement, practical experiments, determination of time required for setting, production of test pieces, experiments as to strength, and the effect of age on the resistance of cement, make the paper to which we have referred one of the most complete on the subject. The writer is M. Barreau, Ingénieur des Ponts et Chaussées.

THE ADULTERATION OF PORTLAND CEMENT.

In order to discover whether cement has been adulterated with blast-furnace cinder, 5 grammes of cement are put in a glass containing 50 grammes of diluted muriatic acid (one part of pure acid and four parts of water). To prevent parts of cement settling at the bottom, the mixture must be stirred with a glass or wooden crusher. Pure cement imparts a yellowish colour to the solution, without rendering it turbid. If, on the contrary, the liquid turns turbid (milky), from the presence of suspended sulphur, while, at the same time, the yellowish tinge disappears, and a strong smell of sulphuretted hydrogen (like rotten eggs) becomes perceptible, this is an indication that blast-furnace cinder has been added. Presence of ground limestone or chalk may be detected in a similar manner. If, on pouring the diluted muriatic acid on the cement, an ebullition takes place, it is a proof of the adulteration with those substances. The greater the ebullition, the larger the addition. Pure cement does not effervesce, because no carbonate of lime is contained in it.

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THE LONDON AND PROVINCIAL FIRE ASSURANCE COMPANY'S NEW BUILDINGS.

At the corner of Abchurch-lane, King William-street, the London and Provincial Fire Insurance Company are erecting an extensive block of new buildings, a portion of which is intended to be occupied by the company, whilst the upper floors will be let as offices. The buildings will have a handsome and commanding elevation in Portland stone, in which a profusion of elaborate and ornamental carving will be introduced. The frontage is 36 ft. in length, and extends to a depth of 80 ft., the height of the building, which contains five floors besides a deep basement, being 58 ft. The elevation at each angle is surmounted by two towers, rising to a height of nearly 70 ft., and above the main cornice in the central portion of the frontage there are ornamental gables. The ground and the first, second, and third floors have bold mullion windows. Immediately above the ground-floor windows is a deep projecting cornice, surmounted by a balcony. There are richly-carved panels carried across the frontage between the windows of each floor, and similarly carved panels and pilasters at each angle of the elevation. The second-floor windows are surmounted by arches, within which there is some very elaborate carving, including the arms of the company. The top floor of the building is in a high-pitched roof, covered in with sea-green slates, the towers being covered with the same material.

The main entrance to the building is in the centre of the ground-floor, the whole of which is intended to be occupied as one large apartment for the transaction of the business; and containing an area of about 2,400 ft. It will be very artistically decorated and fitted, and will be lighted by an ornamental lantern in the centre covered in from an open well, faced with white enamelled brick, from which several of the offices in the upper floors of the building will also be lighted. A considerable portion of the basement, which will also be occupied by the company, will be fitted up as a strong room. The ground-floor portion of the building will be entirely fire-proof. There will be a separate entrance at the corner of King William-street, leading, by a stone staircase, to the upper floors containing the general offices.

Messrs. Davis & Emmanuel are the architects, and Messrs. Trollope & Sons the contractors. Mr. Richards is foreman of the works. The cost of the building will be about 10,000*l.*

STAIRCASE OF THE "PUERTA ALTA," OR "CORONERIA," BURGOS CATHEDRAL.

We learn from Spanish historians that Don Juan Rodriguez de Fonseca, an eminent prelate, who resided at Burgos from 1513 to 1524, impelled by veneration for the basilica of that city, the work of Francisco de Colonia, conceived, in 1516, the idea of dismantling the staircase of the upper door, and of replacing it by a more ambitious piece of architecture. Accordingly, he had the old staircase removed, and submitted to the cathedral chapter a sketch for a new erection, drawn by a certain Diego Sylve, an artist of the time well known for his works. The project was sanctioned, as we learn from an entry made in the minutes of the chapter meeting on November 4th, 1519, and begun and completed under the prelate's supervision. As late as 1866 it was not known who was the originator of the design; and it was only then discovered by the learned author of the "Historia del Templo Catedral de Búrgos," Señor Don Manuel Martinez y Sauz, canon of the cathedral.

The staircase, of which we give an illustration in this week's *Builder*, is placed on the north side of the transept, between the chapels of San Nicolas y del Nacimiento and of the Concepcion de Nuestra Señora, and served formerly for the upper door or *coroneria*, which was closed in 1786, by order of the chapter, on account of the draught which it caused in the church. The staircase was called in the sixteenth century, and even later, *escalera dorada*

(gilded staircase), on account of the ironwork being gilt. The latter is stated to be the work of a Frenchman, Hilario, and not (as is erroneously asserted by Señor Madoz, in his "Diccionario Geográfico") of Cristóbal de Andino, architect and sculptor, who, however, made the valuable ironwork which adorns the chapels of the Condestable and of the Consolacion y Presentacion de Nuestra Señora. On the staircase, which was erected and completed in 1522, is placed an altar for the Maundy Thursday celebrations.

WAREHOUSE, HARROW-ROAD.

THESE premises are amongst the largest which have been erected in London in connexion with the leather trade. They have been built by Messrs. Lilley & Skinner. A spacious and very light basement, nearly 14 ft. high, gives accommodation for about 130 persons engaged in the manufacturing department. On the ground-floor are the private and clerks' offices and waiting-rooms, a large leather show-room, goods entrance, and lift. The three upper floors consist of warehouses and show-rooms. The frontage is about 110 ft., and the site, which occupies a conspicuous corner against Paddington-green, forms a part of Harrow-road as widened and improved by the Metropolitan Board of Works.

The building was erected from the designs of Mr. J. Wallis Chapman, of 11, Sutherland-gardens, Harrow-road, by Mr. J. Woodward, of Wilson-street, Finsbury, in fourteen weeks.

NEW STREETS AND COMMUNICATION BETWEEN HOLBORN, THE LAW COURTS, AND THE STRAND.

THE completion of the new Palace of Justice, and the certainty that very shortly this important work of Mr. Street's will be opened by royalty, —either the Queen in person or the Prince of Wales,—brings the subject of the approaches to the building prominently before us.

One of the longest-felt wants in our street communications, and one of the most obvious in that business part of London, not being actually in the City nor the West End,—long, indeed, before the Post Office had formed its districts, and called this one "West Central," —has been the want of direct connexion north and south between the line of the "New-road," as it used to be called, which receives all the streams of traffic from the high ground of Hampstead and Highgate, and the slopes of the same, as Haverstock-hill, &c., and the line of the Strand,—from which steep streets run down to the Thames Embankment.

The Holborn line runs about midway and parallel to these two main lines, receiving on the north and giving out on the south, as it were, in some few irregular little streams, the traffic which ought to flow on in continuous courses. None of these pass onward in anything like a direct line. Some come altogether to an abrupt ending in Holborn, and a passage can only be continued southwards through small and distant openings, almost lost amidst a locality filled with poor and narrow lanes, which should have been marked "no thoroughfare" long ago, as they lead nowhere, and end only in confusion and dirt. Only the London cabman can be trusted to find an exit through the tortuous and narrow ways from Bloomsbury or the neighbourhood of Lincoln's Inn Fields to Somerset House, or that part of the Strand between St. Mary's Church and St. Clement Danes. If a stranger try it, he is as likely as not to get into a very dirty and once really dangerous *cul de sac*, and be set upon by little ragged urchins offering to show him the way out, hoping for some trifle for so doing. To find one's self caught in the neighbourhood of Clare Market without plenty of time to seek one's way out is really not a pleasant matter, as many of our readers may well know.

From time to time remedies for this state of things have been suggested, but when the great discussion as to the site of the new Law Courts was going on, some special plans were produced differing according to the position in which it was suggested the Palace of Justice should be built. One notably,—proposed as the site the centre of Lincoln's Inn Fields, giving additional access thereto by openings north and south of that locality. In that case of course the objections of the occupiers of the houses adjoining, to the great traffic brought to and through the Fields, would have had to be overcome.

But the erection of the Law Courts on the Carey-street site, as it is called, and the completion of them for the present, have both set aside all these premature schemes, and afforded an opportunity for bringing forward one which is eminently practicable,—designed by Mr. C. Forster Hayward, F.S.A., architect,—which we reproduce in our present issue. Though long contemplated by the author, it is new in the sense of being just adapted to the circumstances of the present time and the exigencies of the case.

It is evident to any one who either knows or studies the locality that, owing to the laying out of the streets and squares in the Bloomsbury district so as to give no through line anywhere, —an arrangement more like the setting out of a maze than of the streets of an inhabited town, —there is but one long *direct* line from the north by Euston to Holborn, past St. Pancras Church, through Russell-square and Southampton-row. This is continued in a direct line across Holborn as far as Great Queen-street, through Little Queen-street (which it was proposed to widen only a year or two ago, and to which improvement the Metropolitan Board of Works were willing to contribute a large sum), and there stops abruptly, the traffic being diverted at right angles,—eastward into Lincoln's Inn Fields, and westward along Great Queen-street, taking its onward course by Drury-lane or Long-acre. The fine old houses on the west side of Lincoln's Inn Fields have all large gardens at the back, on part of which exist some old sheds and one-story buildings, not only of little value, but some of a highly objectionable nature, so that there is no formidable range of buildings to take down nor valuable businesses to require compensation.

Mr. C. F. Hayward, besides being an architect of many years' standing, is the District Surveyor for the St. Giles's district, and being, as may be supposed, well acquainted with the locality, has planned to continue this line southwards by a new street cut through the gardens, sheds, and similar unimportant property existing at the back of Lincoln's Inn Fields, passing through Chapel-mews and Bear-yard with a slight curve, and so avoiding the Roman Catholic chapel in Sardinia-street and the School Board schools in Vere-street. At this point the new street would open into a wide "Place" or "Circus," the centre of which would be in the exact line of the west side of Lincoln's Inn Fields, to which it would be opened by removing some old projecting buildings in Portsmouth-street. Some new frontages already built would form part of this new Circus. It would then pass on to the Carey-street front and west side of the new Law Courts, and so on to the Strand, near St. Clement's Danes, leaving King's College Hospital on the east and Clement's Inn on the west intact.

By a continuation of Newcastle-street, Strand, in a direct line to the Circus (with very little demolition of property, as it would cross two streets in that small distance), the traffic for the west would be diverted from the line of the Law Courts and pass out through Newcastle-street, close to the Church of St. Mary-le-Strand. Thus special facilities would be separately afforded for both the south-eastern and south-western traffic to and from the north without entering Lincoln's Inn Fields at all.

It is supposed, however, that suggestions from another quarter for opening up the north-western end of Lincoln's Inn Fields, through Little Turnstile from Gate-street, are under consideration, and if so, the traffic requiring to go in that direction will also be facilitated; but this opening alone would not permit of direct northern traffic, and, although in itself desirable, would still leave the difficulty of *direct* communication in that direction just where it is. At the same time this opening into Holborn would form an admirable supplement to the plan herein proposed, and the objections which the inhabitants would surely raise if the whole of the traffic northwards were carried through the western side of Lincoln's Inn Fields, would be less if the main traffic northwards were diverted to a more direct line behind, and only such portion as required to go towards the City passed through the fields.

The importance of the subject to this locality of the metropolis is considerable; for the utilising of vacant ground, the improving the rating value of the district, at the same time that the thoroughfares are increased in number and some widened and improved, cannot but be matters of special interest to the inhabitants of the locality. It is seldom that so large and so long-acknowledged an improvement can be so easily and so cheaply accomplished, there being hardly any other neighbourhood wanting communications where there is at the same time so little in the way of them; for where the ground is not actually vacant, the property is generally so wretched and bad, in a sanitary as well as a constructive point of view, that it has long been understood to require renovation the first opportunity.

The openiug of the New Law Courts will show the necessity for some plan for access on the north-western and south-western sides, and it is submitted that the plan proposed herein is the most desirable to adopt in the interests of the public generally as well as of the inhabitants of the locality in particular.

Many additional communications suggest themselves, and some are shown upon the plan, such as the connexion which might be opened with Covent-garden, now that the street, — late Princes, now Kemble, street,—is widened, and bounded by Peabody Buildings, and with Long Acre through the head of Great Wild-street. Again, the widening of the Strand and Wych-street, continuing Drury-lane, and so forth. But one of the most valuable would be the removal of the block of buildings in Carey-street, next King's College Hospital, and so adjusting the entry into the new street that a further space could be given to the site for the New Law Courts, which indeed may soon be greatly needed.

Mr. Hayward's plan was referred to in the address of the President of the Institute as reported in our last week's issue, p. 613, and many others professionally well acquainted with, as well as inhabitants of, the locality,—notably, the venerable Professor Donaldson, than whom none perhaps can be a better judge,—have expressed themselves highly favourable to the proposal. We can only express a hope that the matter may receive the fullest consideration of the authorities.

HOUSES AT BROMLEY.

THESE houses have a good frontage to the Windmill-road of about 45 ft. each, and are separated by a 10 ft. passage. Each contains on the ground-floor a drawing-room, 18 ft. by 17 ft.; dining-room, 24 ft. by 17 ft., and library, 16 ft. by 14 ft., with good kitchen, scullery, &c. On the bedroom floors there are ten good rooms, bath, w.c., &c., and every domestic convenience.

The corner house has a return frontage to a new road, in which is placed the main entrance. The chimneypieces to the reception-rooms are of carved walnut and oak, and the corbels of the fittings throughout are of a superior kind. The materials are red bricks with tile roofs and covering to the upper stories. The cost was the very moderate one of 3,550*l*. the two.

The architect is Mr. Charles Bell, F.R.I.B.A., of Dashwood House, 9, New Broad-street, City.

Sanitary Association for Rathmines and Rathgar, Dublin.—A meeting has been held in Rathmines Town-hall for the purpose of forming a sanitary association for the township of Rathmines and Rathgar. Dr. Montgomery Ward, one of the speakers at the meeting, stated that the authorities of the township hoped in a short time to have an ample supply of pure water for it. The works for that purpose were progressing under the supervision of Mr. Hassard, C.E. The township commissioners, in conjunction with those of Pembroke township, had already completed a perfect system of main drainage for the two townships, by which the sewage of those townships was conveyed into the sea, half-way between the Pigeon House and Poolbeg lighthouse. It was resolved to establish the association, and on the motion of Dr. Cameron it was agreed,—

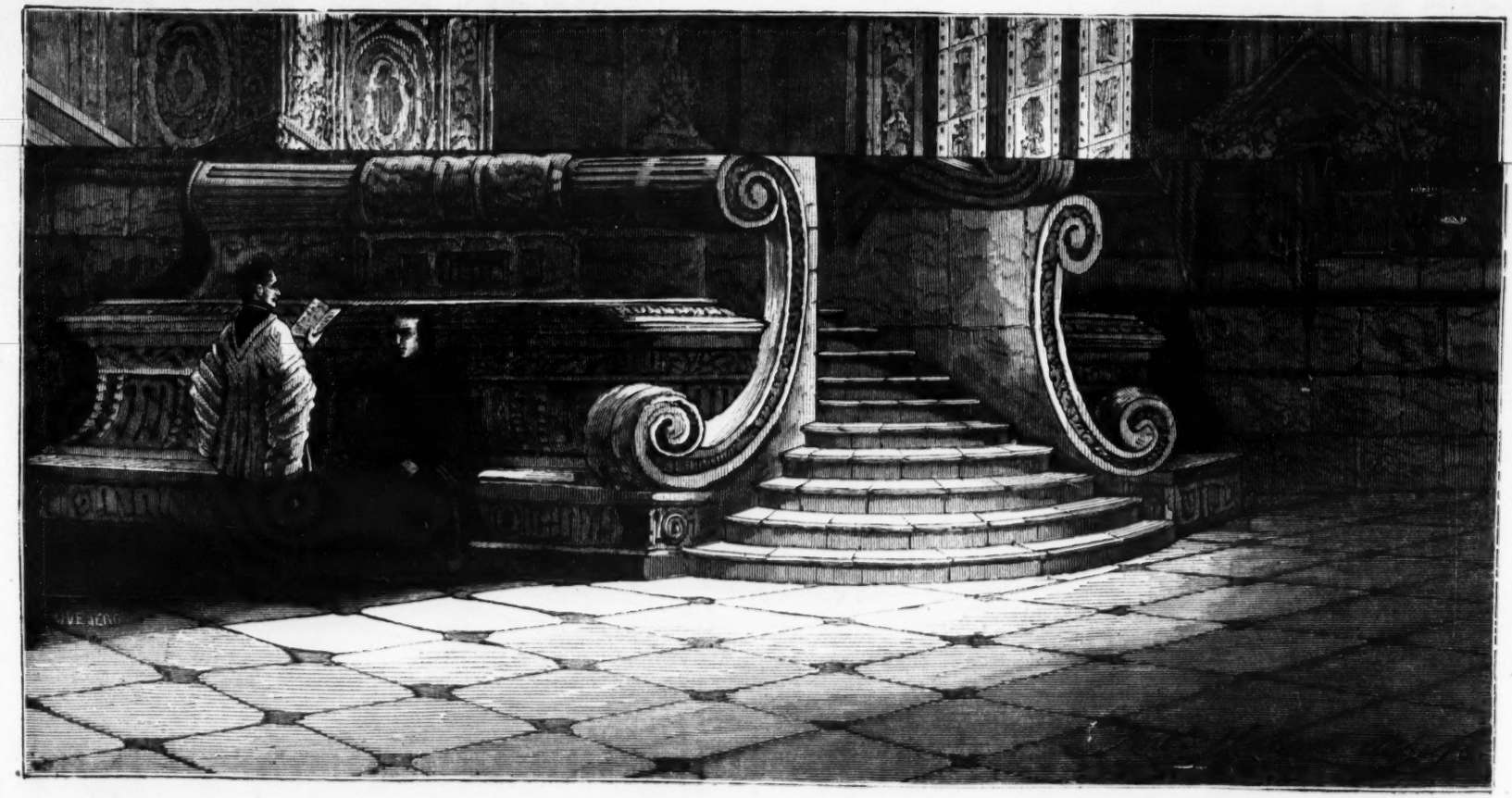
That the objects of the association be,—(1) To instruct all classes of the public in practical sanitary knowledge; (2) To co-operate with the sanitary officers in carrying on their work of inspection; (3) To use all legitimate means to check the spread of infectious diseases; and (4) To provide suitable visitors to go amongst the working-classes, lend sanitary pamphlets, and give them hints on the simple laws of health.

New Warehouse for Messrs Lilley and Skinner. J. Wallis Chapman, Architect, 11 Sutherland Gardens, Maida Hill W.

Whiteman & Bass, Photo-Litho 236 High Holborn

Wyman & Sons, Printers, 74 Queen St

WAREHOUSE BUILDINGS, PADDINGTON GREEN.



THE STAIRCASE OF THE CORNER, BURGOS CATHEDRAL, SPAIN.

New Warehouse for Messrs. Lilley and Skinner

WAREHOUSE BUILDINGS, PADDINGTON GREEN.

J. Wallis Chapman, Architect, 11 Suffolk Street, Pall Mall, S.W.

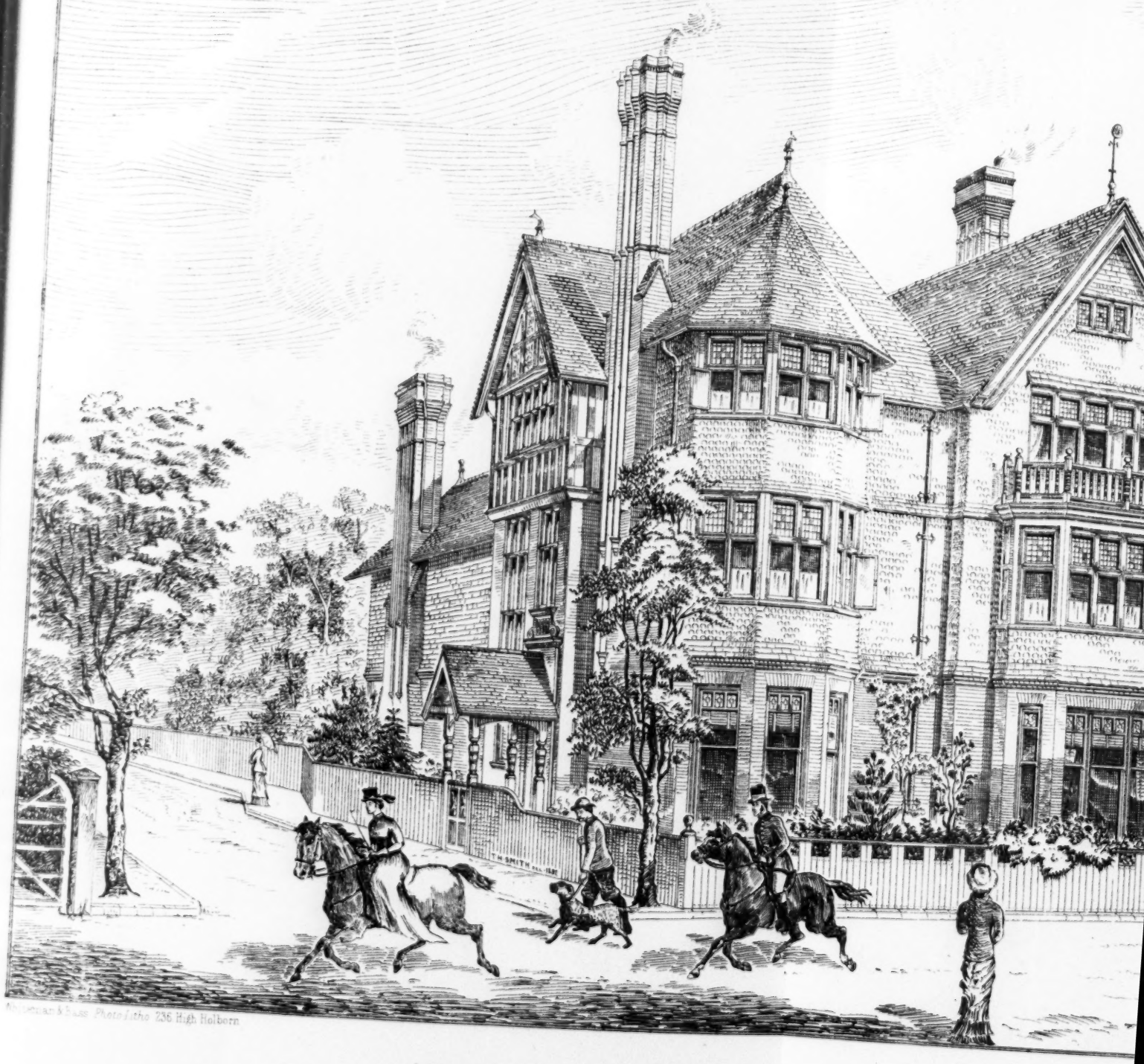
Bierman & Bass, Photo-Litho, 236 High Holborn

Wyman & Sons, Printers, 74 Queen St.

THE STAIRCASE OF THE CORNER, BURGOS CATHEDRAL, SPAIN.

Two Houses in the Widmore Road, Bromley, Kent.

Charles Bell Architect, F.R.I.B.A.
Dashwood House, 9 New Broad St.
London E.C.



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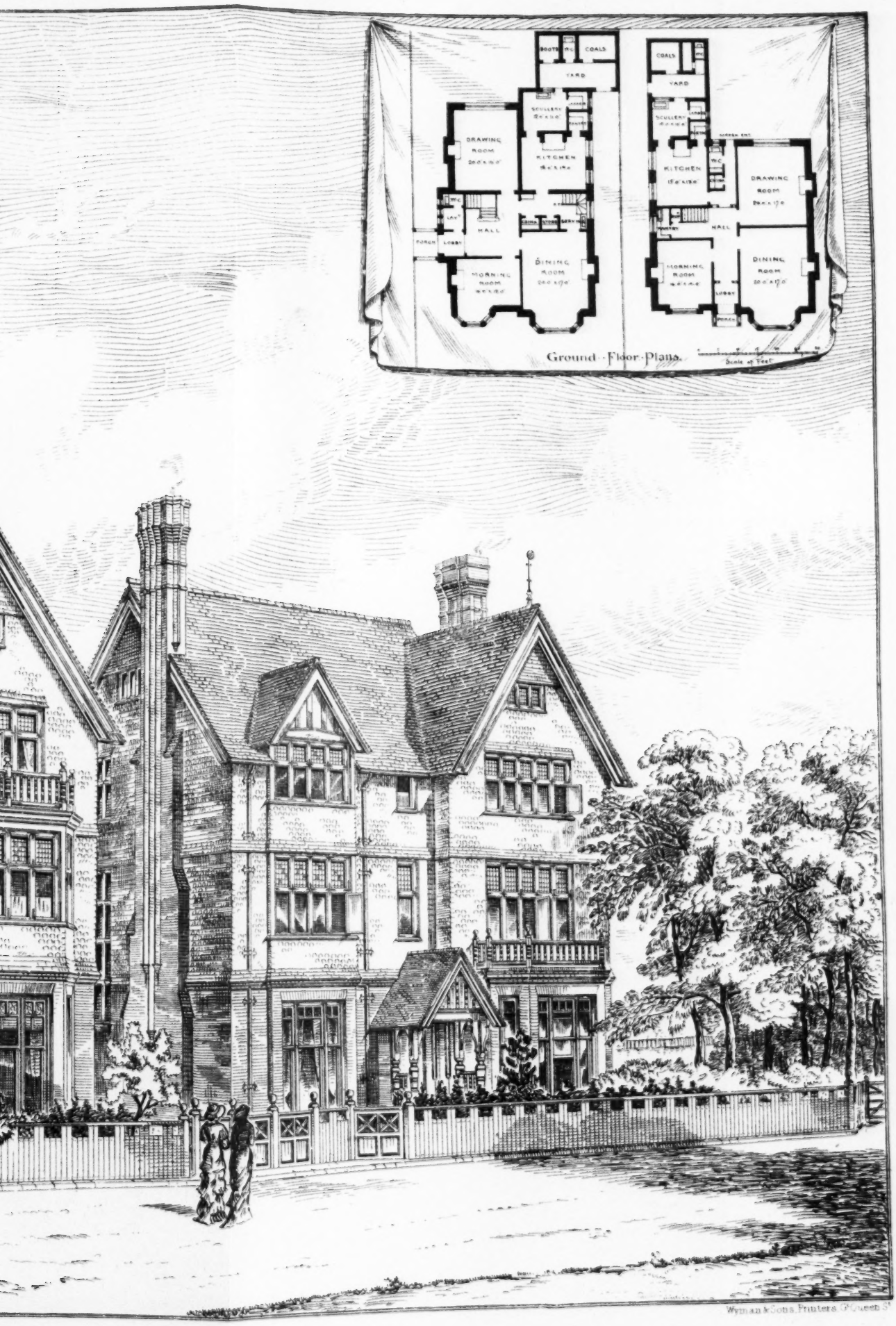

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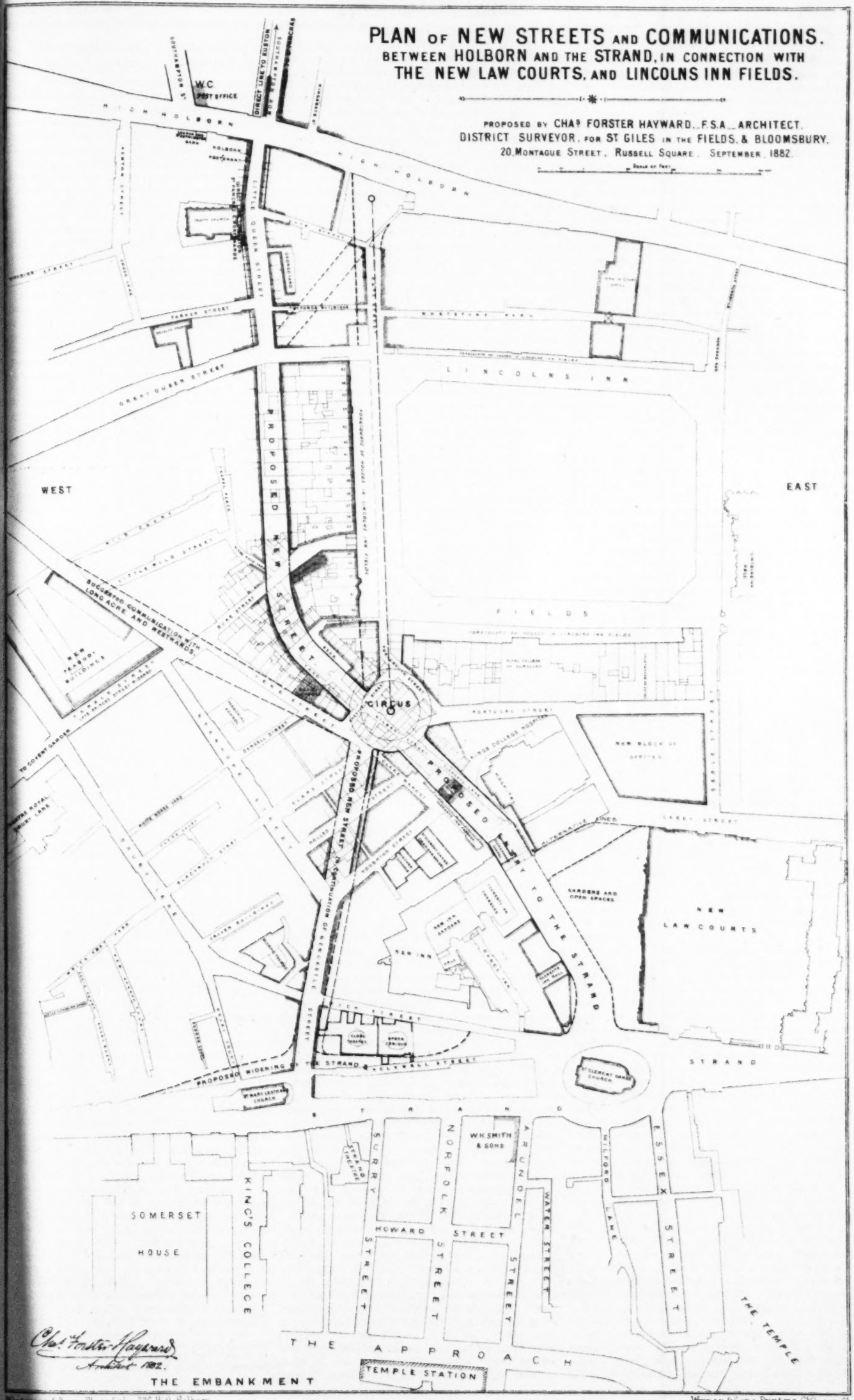
PLAN OF NEW STREETS AND COMMUNICATIONS.

BETWEEN HOLBORN AND THE STRAND, IN CONNECTION WITH THE NEW LAW COURTS, AND LINCOLNS INN FIELDS.

PROPOSED BY CHAS FORSTER HAYWARD, F.S.A., ARCHITECT.
DISTRICT SURVEYOR, FOR ST GILES IN THE FIELDS, & BLOOMSBURY.
20, MONTAGUE STREET, RUSSELL SQUARE. SEPTEMBER, 1882.

Scale of Feet



Chas. Forster Hayward
Architect 1882.

Whitehead & Bass, Photo-Litho, 236 High Holborn

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PROFESSIONAL TOPICS AT THE ARCHITECTURAL ASSOCIATION.

The Architectural Association held its first ordinary meeting for the Session 1882-83, on Friday, the 10th inst. After the despatch of other business (which included the nomination of no fewer than fifty-nine new members),

The President (Mr. E. G. Hayes) delivered his inaugural address, in the first portion of which he reviewed the educational work of the Association as carried on during the past session by the various classes, courses of lectures, and other means. Although a very great deal of useful work was done in the classes, its amount might be greatly increased if a larger number of members joined the classes and attended regularly. Reference was made to the value of the courses of lectures now in progress of delivery to members of the Association by Messrs. Tarver and Blashill, in connexion with the Classes of Design and Construction. The library of the Association now contained about 1,200 volumes, and was much used and highly appreciated by the members. The excursion to Northamptonshire was largely attended. The work seen was for the most part domestic, and of that peculiar character which was familiarly described as "late and flat." Nothing earlier than the thirteenth century was worth looking at, and nothing (as it appeared to some of the party) was too late or too utterly dreadful to be sketched, measured, and adored. Even the cherubs' heads and the palm-branches on the tombstones in the churchyards did not escape attention. However, the annual excursion afforded an agreeable opportunity for studying in common such specimens of work as the taste of the day or the inclination of the members might lead them to select. Looking at the general position of the Association, the President observed that if the accession of new members was to be taken as a sign of increasing prosperity, the Association might certainly congratulate itself.* Passing on to topics of general professional interest, he said:—

I must not neglect to say a few words upon the subject of the Institute Examination. We shall, no doubt, all be ready to admit the desirability, if not the absolute necessity, of taking some steps to insure a fit and proper training for all those who may wish to practise as architects. It is desirable first, upon professional grounds, that by guaranteeing a certain known and recognised standard of proficiency in all those who may hereafter become Associates of the Institute, the professional status of the whole body may be raised, so that in course of time the mystic letters signifying membership will have a real value, and no architect will be recognised unless he has them, and thereby unqualified practitioners will be excluded. It is desirable, upon public grounds, that in employing the services of an architect, the public may be assured that they are placing their interests in the hands of a man who has received special training for the work he undertakes to do, and does not simply rely upon his own very common sense for the general idea, and upon other persons' brains and knowledge for the practical working out of the scheme. And last, but not least, it is desirable, for the sake of architecture, that our art, which is so long-lived, may, so far as lies in our power, be improved, or, at all events, may run less risk of being vulgarised and brought into disrepute, as it too often is now by the performances of amateurs and others whose only qualification would appear to be a knowledge of "how not to do it." With these ends in view, it behoves us all to do what we can to insure the success of the scheme. Every student should be encouraged to look upon it as a necessary part of his career, and must no more dream of trying to practise without it, than a doctor or a lawyer does, each in his respective calling. It will, no doubt, involve a certain amount of hard work and self-sacrifice; but the end to be achieved is well worth this, and it is not so great but that two sessions of diligent work in our classes will go a long way to prepare a student for it.

There is no doubt that the position of architects, as a body, will be greatly improved in time by this Examination. There is great room for improvement in this respect; at the present time there are so many hangers-on of all kinds,—men who have possibly been in some branch of the building trade dub themselves architects; others there are who consider it a nice easy sort of occupation to combine with sundry other vocations which they already carry on, such as agencies, and the like. These are the things which have brought the profession into disrepute, so that the ordinary public scarcely know what an architect is, or ought to be. He is often looked upon, by people who ought to know better, as a sort of builder, a useless kind of being upon the whole, and one of whose duties and responsibilities very little is known. Persons of this class would rather place their interests and requirements in a builder's hands, with vague uncertainties as to price, and what they are to get for their money, than incur the cost, but to them the doubtful advantage, of employing an architect. Then there is another class of persons who think because now any one can call himself an architect, so any one can do an architect's work. Such a man is frequently met with; he has great confidence in his own capabilities, and is sure he could design a house as well as any architect. He knows exactly the sort of plan he requires, which is probably that of some house he recollects; he is discreetly silent as to the elevations, but assures you confidently he is sure he could carry it all out, and that all it wants is a little common-sense. If he tries, he probably finds that this was precisely what he did want.

Much of the ignorance as to the duties and responsibilities of architects, and the tendency to amateur performances referred to, will doubtless disappear before an assured status, such as will be obtained for the profession when the Examination becomes a fully-recognised qualification.

It will, I fear, be a long time before the public will be brought fully to recognise the fact that architects are men whose profession, upon the artistic side, consists in showing upon paper plans and designs for buildings, and other schemes, which ideas are afterwards carried out by them, and consequently that they are better able to judge of the effect of designs when upon paper than those who do not devote themselves to such matters, and often scarcely understand what a plan is. We have seen recently some cases in which architects have ventured to express their opinion upon some proposed public improvements, and in both cases, I believe, the suggestions have been politely declined by the unprofessional judgment of those in authority. It is a great pity that such should be the case, but so it is. This great city of ours might be a very different kind of place if in all those questions artistic effect received its proper share of consideration, instead of being, as it generally is, thrust aside, and the utilitarian aspect alone considered.

There is another matter which I think has an important bearing upon the status of our profession generally, and that is the habit which architects have of criticising in rather too unmeasured language the works of their brethren. Now, it always seems to me that we get quite enough criticism of this kind from an unthinking and unappreciative public. In most things it is considered desirable that a person who takes upon himself to criticise any particular work should know something of the matter upon which he wishes to speak. This fact does not seem to be at all recognised as regards architectural criticism; in this subject any one who has eyes to see does not hesitate to form his judgment and to condemn or praise as the spirit moves him, but generally the former. Now, I think it is a pity for us to lend ourselves in any way to this sort of thing. We should endeavour to be temperate in our remarks, not finding fault, as would almost seem to be the case sometimes, to show forth our own fancied superior knowledge,—to appear wise in our own conceit. If we undervalue and condemn each other too hastily, we do but encourage the wholesale system of criticism and condemnation to which we are all more or less subject.

It is a useful thing for us to stop, as it were, for a few minutes, as we are doing to-night, to review generally the work of the past session, and our plans for the future; to consider whether we are taking that position as a student society which we ought to take.

If we look around we see on every side great activity in the architectural world. There is no doubt that our art has been making great progress in late years. Very many large and important buildings have been put up in different parts of the country in almost every known style of architecture. These buildings show in most cases a variety in design and fertility of imagination which are very creditable to the profession at large. All this variety of design and the information essential to meet the numerous and varied uses of our modern buildings necessarily entail an increased range of study upon the part of the architectural student, and I think that any one who looks at the history of the Association will see how it has endeavoured to keep abreast of the demands of the age, and to satisfy the probable wants of its members upon all artistic and practical subjects.

The so-called Queen Anne revival still continues to be very fashionable, and appears likely to hold its own for some time to come. It includes in its modern treatment a wide range of design, which makes it equally suitable for a cottage or a mansion, or for public buildings of almost any kind, and whatever may be the objections to it, we cannot say so much of many other kinds of work. It is adapted to modern requirements in various ways; first, because it allows of large windows and plenty of them, and does not altogether ignore the good qualities of plate-glass, for which so many of our clients entertain such an unbounded admiration, while, at the same time, the artistic eye can be partially satisfied by stout sash-bars and small squares introduced into other portions of the design. Then it does not altogether object to lifting sashes, and it admits of the more artistic treatment of this deservedly popular form of window. Also, on account of its entire freedom from rule or order, it lends itself to all our modern requirements in planning, and at the same time allows of the introduction, even in buildings of the simplest kind, of internal features which give character to the work throughout. Another important consideration which has made this kind of work so very suitable is that it is essentially a brick style of architecture; and although in its more elaborate developments of carved brickwork it is almost as costly as stone, yet these elaborations are luxuries which need not be introduced. These are some of the chief reasons for the rapid rise and extensive use of this fashion of buildings, and which will in all probability serve to keep it in fashion for some time to come. We know that it is looked down upon and ridiculed by many, and that the detail has been stigmatised by a great poet as "jolly rubbish, which can be rattled off by the mile." This, however, is not an essential quality in the work, although, no doubt, it is a distinguishing mark of much that is done. Many modern buildings might be mentioned in which great refinement is shown in the details and mouldings. I think the charge of want of refinement is with more reason to be brought against the work in its main features and general outlines, in which quaintness of form is frequently carried to a point verging upon extreme ugliness. I leave for the present the question how far these ugly, hump-backed, one-eyed effects are useful in architecture in enabling us to appreciate the more beauty of form and purity in outline when we see them.

We have lately seen some revivals of a slightly earlier type of work, when the mouldings and ornaments of the Renaissance were being engrafted on to the dying-out forms of Tudor work which had preceded. This was, to a great extent, the type of work visited in the recent excursion,—generally picturesque and interesting, often good in form and sometimes in detail, but very often coarse both in the one and the other; in any case, an undesirable training for a student, who ought certainly to be encouraged to gather his inspiration from purer sources. It would seem that in designing work of this description more than the usual amount of care and taste is necessary to prevent the introduction of features which, however picturesque they may be in themselves, tend to vulgarise the design. These mixtures require to be compounded with very great skill and judgment, or they had better be left alone.

We seem to be unable at present to pin our faith to any particular style of work for secular purposes: there seems to be such a ceaseless craving for novelty and variety. This is no doubt due to a large extent to the prevalence of the competition system, the desire or the necessity to produce some startling novelty, some sensational effect, which shall attract attention and perchance obtain the work. Were it not for this, architects would, I doubt not, be willing enough to be "sober in their designs," and to cease striving after eccentricities which tend so much to vulgarise our art, and there would be

* The "Brown Book" of the Association states the total number of members to be 894 (of whom 725 are resident in London), as against a total number of 863 in Session 1881-82.

a better chance of carrying on more generally some kind of work, and possibly developing it in a way that should make it distinctive of the latter part of the nineteenth century.

I ventured the other evening to make a few remarks upon the prospect of a new style in architecture, and to express my opinion as to the possibility, or, rather, the impossibility, of such a thing.* This opinion was based upon the assumption that the various combinations of forms which, in past ages, have been adopted, and which constitute the different styles, are, in reality, well nigh worked out and exhausted, and that it is hardly possible to devise any sufficiently new combinations to produce a really new and distinct style. I will not take up your time by attempting to follow out this reasoning, because it can have no practical result, although the subject is one of much interest as a mere speculation. However, I may say this much, that if we are to have anything approaching a new style in architecture, which I am not at all sure is wanted, it will be produced only by combined effort and by steady systematic work in one direction, starting with some particular style as a basis, and training students to work in it alone. Then in time the requirements of the day, being expressed by many minds, may possibly develop into a really modern style. This is, however, but a mere dream. At the present time we are further from it than ever; all the change and variety in which we are now indulging will certainly not conduce to anything of the kind.

And now let us consider, for a few moments, what is the chief end and object of all our work here. It is in order that we may endeavour, as far as possible, to follow out the advice given in our motto,—"To Design with Beauty and to Build in Truth." How difficult it is to arrive at any proper appreciation of what is really required by the first part of this instruction, and how much more difficult it is to explain! We can, no doubt, all talk glibly enough about beauty in architecture, and each one of us probably thinks he knows what he means, but it is not easy, if not impossible, to define it closely. Mr. Fergusson, in his work upon the subject, says:—

"One of the most prevalent sources of error is the assumption that beauty is one single and well-defined emotion, and capable of being reasoned on as such, whereas, in truth, nothing can be more various and, at the same time, more universally prevalent; and so variously are we formed, that to no two men is it the same thing, though all can perceive it, and most men fancy they see it as others do; so each man assumes the beauty he sees or can appreciate to be the only true one, and excludes all others from the category."

This is very true, because, in considering the question in regard to architectural design, we are confronted at the outset by the fact that, unfortunately, architects who make these questions the study of their lives are so seldom able to agree as to the merits of any particular work. There are, of course, the differences of opinion caused by a partiality to some particular style or period of work. A Gothic man cannot see any beauty in a Classic design, and *vice versâ*. However, differences of opinion arising from any of these causes must be disregarded as not worth a moment's consideration, being prompted by individual taste or by fashion, both of which now-a-days change very rapidly. There is no doubt that each style may lay claim to some particular merits,—that all have some qualifications which may entitle some buildings erected in them to rank as works of art and beauty. These qualifications may be defined somewhat as follows:—A perfect sense of repose, of constructive fitness and suitability, a feeling that everything is in its place exactly where it is required, and a sufficiency of ornamentation to impart proper richness of effect, but no excess; in one word, the work must be well proportioned. The word for this purpose must be taken in its widest sense, and must regulate, not only the quantitative relation of the various masses and voids, but the size, position, and amount of all the accessories, such as mouldings, carving, and other ornament. In a perfectly well-proportioned building it will be found either that the bare forms of solids and voids are such as to satisfy the eye by their proportions, and that the arrangement is such as not to be materially affected by the addition of the mouldings and ornament, or it may be that the building requires the addition of its mouldings, strings, or dressings to complete the forms intended and to make them satisfactory in their individual proportions or relatively to each other.

A very great deal has been written and said at different times upon the subject of proportion in buildings, and many attempts have been made to show that beauty in proportion, that is to say, satisfactory relative dimensions of the various parts, is founded upon regular geometrical forms, and that without such geometrical basis such proportions can hardly be satisfactory or beautiful. It is not possible for me now to attempt to discuss this question; it is one of very great interest, and well worthy of close attention. However, I must say this, that although I believe there is a great deal of truth in the system proposed, I do not think it is possible, or hardly even desirable, to reduce the process of architectural design to any such almost mechanical method. The variety of form is so great, and the requirements of our art are so various, as to baffle any attempts to systematise them on a geometrical basis. Ruskin, in his "Lamp of Beauty," says:—

"Proportions are as infinite as possible airs in music, and it is just as rational to attempt to teach a young architect how to proportion truly and well by calculating for him the proportions of fine works, as it would be to teach him to compose melodies by calculating the mathematical relations of the notes in Beethoven's 'Adelaide' or Mozart's 'Requiem.' The man who has eye and intellect will invent beautiful proportion, and cannot help it."

I will quote here also a few words from an article in a recent number of the *Builder*,* which have an indirect bearing upon the subject under consideration. The writer says:—

"All buildings are erected by human hands for human use in one way or another, and hence the scale of the human figure becomes, in regard to architectural proportion, a kind of constant, the effect of which must always be taken into account."

Now it seems to me that the idea suggested by this quotation is the true one, and I do not suppose any one will disagree with the proposition. I wish particularly to commend it to your consideration with this addition,—that the question of fitness and suitability in architectural proportion is to be judged readily and satisfactorily by the eye alone, but that in order to do this the eye must have been trained by a course of study which shall enable it to appreciate the true and the beautiful.

There are and must necessarily be many different degrees of beauty in architecture, as there are in nature, and the differences are caused by the predominance given to one or more of the various qualities of which it is constituted. It is not possible, perhaps not even desirable, for many buildings to possess the highest form of ideal beauty which I have been endeavouring to describe. In buildings of the very highest type the world has ever seen, such as a Greek temple or a Gothic cathedral, the effect is produced by the careful blending in the composition of all these qualities, and the result is the production of works of sublimity and grandeur which have never been equalled. These results of sublimity and grandeur can only be obtained in buildings of considerable importance or monumental character; in most cases we can only attain a much lower standard, until at the lowest end of the scale we must be content with an honest expression of the minor requirements, with such forms and proportions as good taste may suggest, only taking care to prevent the introduction of meaningless and vulgar ornament, which one so frequently sees, and which spoils what might otherwise be a satisfactory design.

Buildings of this kind may be exceedingly plain in outline, entirely devoid of ornament, of quaint, squat, or ugly proportions, but may yet bear upon their face clear evidence of the designer's thought and care. Such buildings, I say, are, of great value in the architectural world. There is a beauty in their simple form, in their plainness, in their quaint proportions,—in short, in their extreme ugliness, which is of the same use in architecture as the ungainly form of a hippopotamus is in the animal world,—that is to say, to set off by contrast other forms and other proportions which are better, and in which more excellencies are combined. At the same time it must not be forgotten that even this perfection in ugliness is not achieved without much care and study.

The sense of a keen appreciation of beauty of form and proportion is one which every student should endeavour to acquire. This sense is, I believe, to be most readily obtained by a diligent course of study from the human figure, and such a course is most desirable for an architectural student. By carefully drawing the figure in outline, or with some rapid kind of shading, not attempting any of that delicate but rather mechanical stippling that we are accustomed to see practised in our art schools, the student learns in time to appreciate delicacy and refinement in form, and the subtleties of perfection in proportion, in a manner and with a rapidity which is, I believe, attainable by no other means. I am told Mr. Burges always attached very great value to this kind of study, and said that he regarded it as a most essential element in the education of an architect. The facilities offered for work of this description in the various schools of art in London are available to all students. I may also draw your attention to the Langham Club, of which particulars are given in our Brown Book. In addition to this drawing from the life, the architectural student must neglect no opportunity of drawing and measuring such executed works as may commend themselves for the purpose.

The objects to be attained by architectural sketching, I take it, are threefold:—

1. To obtain a practical familiarity with the forms and details which were in use, and which constitute the distinctive features of a style, and which cannot be learned from books alone, and to study their proportions.

2. By studying features which are admirable when executed, and transferring all particulars carefully to paper to acquire a knowledge of the reverse process.

3. To lay up in the mind stores of forms and ideas which can be and are unconsciously drawn upon in designing, and which materially assist in combination of new forms.

Under the first heading would be classed all the carefully-drawn outline sketches which are or should be made by a student, and in making them the objects to be gained should not be forgotten; these are to learn the character of the work and to study the proportions,—which, of course, by the selection, we assume to be good,—but certainly not to make pretty pictures. It is important to pay attention to these points. One frequently sees brilliant, showy sketches rapidly done, which are far from being true representations of the portion of the building sketched. It is hard to see how work of this kind can be of much value. With the second object in view, namely, to learn the relative effect of features upon paper and in stone, the best plan undoubtedly is to draw and measure the work, and to plot it to scale upon the spot. It is much better to do so than to leave it to plot afterwards, because it can be done with greater accuracy. And it is as important, if not more so, to measure and draw out the mouldings as the complete feature, in order to learn the effect that the different sections have when executed in the round. The third object is, of course, attained by drawings of both the kinds we have been considering; but the various notes and little bits which one does from time to time are done solely with this object. These little sketches are not to be allowed to take the place of the other two kinds referred to, but only to supplement and follow them. These small sketches are often necessarily roughly done, and an architect looks upon them simply as memoranda to give him hints for new combinations, and trusts to his own power to adapt, modify, and shape them as occasion may require. In these days of changing fashion and requirements, and of the frequent necessity there is to make a design rapidly, it is of importance to every architect to have a store of such material laid up in the recesses of his mind, and he is likely to succeed best who has the largest store to draw upon.

One word as to the manner of sketching, before leaving the subject. Ruskin says, "All merely outlined drawings are bad, for the simple reason that an artist of any power can always do more, and tell more, by quitting his outline occasionally, and scratching in a few lines for shade, than he can by restricting himself to outline only." And again, in another place, "A good artist habitually sees masses, not edges, and can in every case make his drawing more expressive with any given quantity of work by rapid shade than by contour." Now how far are we, as architectural students, to consider it desirable to follow this advice? The answer seems to be, that so far as we are

* See *Builder*, p. 586, *ante*.

* See p. 294, *ante*.

simply studying effects which we see executed in order to be able to produce similar effects from geometrical drawings, outlines are the best. But if we are wishing to carry away memoranda of massing and general effect, or of details, this is more effectually and rapidly done by means of shaded sketches.

The necessity of following out, as far as possible, the advice contained in the second part of our motto, is one which we shall, no doubt, all be ready to admit. It is desirable, apart from any question of truth or honesty, in the interests of art, for nothing can be really beautiful unless it is true. The beauty that is attained in a building by honestly expressing the arrangements and requirements of the interior ought to be of more value than that which is obtained when the necessities of the interior have been sacrificed to produce it. And this honesty of expression as regards the elevation of a building is the chief thing to be considered, because there is, I think, no more necessity, as a matter of principle, to insist upon the details of construction in architecture being shown for the sake of truth and honesty, than there would be for insisting upon our seeing the framework or skeleton of every leaf and flower that grows, and of every being upon the face of the earth. There can be no objection, but rather the reverse, to cover up, clothe, and decorate the rough unsightly forms which compose the framework of a building, whenever desirable, and it only becomes wrong to do this when the covering is used to disguise and apparently alter the forms, and not merely to cover them, or when it is done with any intent to deceive.

The requirements of modern building unfortunately often compel us to do things which are and cannot but be most unsatisfactory, artistically speaking, such, for instance, as the small supports and wide openings filled with plate glass, which are required in shop-fronts. It is impossible to make anything decent of this sort of thing, either by showing the supports and girders, or by casing them; the latter plan, I think, generally preferable, for several reasons.

But there really are very few cases in which an architect is tempted to disguise his construction in any way, and it is always made more satisfactory to ourselves so to proportion our work as to satisfy the eye and mind of the observer. Then, with regard to truth in finishing and decoration, for similar reasons it is quite permissible to clothe and cover up any common material for the purpose of adding a better surface. Why should it have been thought almost wicked to plaster the walls of churches, as it was some time since? If one cannot afford to build the walls with a material which has a sufficient finish for an inside lining, it is much better to plaster them. There is no deception done, or intended to be done. The question of painting in flat colours *v.* graining has been often considered, and the flat colouring is generally voted the more artistic treatment. There are many advantages in the other method, but although it rarely does deceive, whatever may be the intention, we must not hesitate to condemn it on principle; and, as a general rule, the treatment of one material in more or less direct imitation of any other is to be deprecated.

I think it was Professor Roger Smith who has paraphrased the language of Demosthenes in saying that the three chief qualifications in an architect are, "1st, Drawing; 2nd, Drawing, and 3rd, Drawing." This, no doubt, is very good advice, but I think it requires a certain amount of modification. There is a great danger, nowadays, of falling into the opposite error of forgetting that our drawings, after all, are but a means to an end, of making them as if they were merely intended for pretty pictures, and not as an honest attempt to show a building as it would appear. This is what another learned professor said upon the subject:—

"Let architects be sober in their designs, let their drawings be made so as to represent the building as the building would be when it was built, eschewing all those tricks and peculiarities of draughtsmanship which were so charming in a picture or an etching. Then if the building were bad in design it would appear bad in the drawing. A great deal of bad architectural work at the present time was to be attributed to nothing more than the self-deception of the designer by his draughtsmanship."

Now we have in these two opinions some apparently opposite views upon the subject. The one seems to magnify unduly the necessity of drawing, and the other implies from the cautions conveyed that the drawing of the present day is frequently made too much of; that the draughtsman, in his desire to make a pretty and attractive drawing, entirely overshoots the mark and deceives himself as to the effect that will be obtained when what he is supposed to be representing is carried out in brick and stone. This over-elaboration in drawing,—this, so to speak, wilful perversion of the truth,—is no doubt to a great extent the outcome of the system of perpetual competition under which architects now suffer, and in these cases we can only look to the forthcoming rules and regulations for the remedy. We must, I think, all admit the necessity for caution in this respect, and bear in mind, as architects, that as a good design may undoubtedly be marred and spoiled by bad drawing, we must be able to express our ideas upon paper so as to convey a correct impression of our building; but we must never allow ourselves to be carried away by the desire to make a pretty picture only, and deceive ourselves as well as our clients. Manual dexterity is, no doubt, a very good thing, but it may be made too much of, and mislead woefully, and in any case it plays a secondary part to that more important qualification, a correct and well-trained eye.

It should be the aim and object of all architects so to refine and elevate their work that it may show to an educated observer unmistakable evidence of the thought bestowed upon it. In proportion as this is the case does the building rank as a work of art, and in that degree may its designer lay claim to the title of artist.

The world has lately been informed by a great legal authority that architects can have no claim to that title, not so much even as a hairdresser; and why? Because they do not work with their fingers. It is hardly worth one's while to take any notice of such a statement. We all know that real architects do occasionally have to use their fingers. I only refer to the subject because I have been at some pains this evening to impress upon you that it is the spirit of our work that is of the greatest value, and that the fingers are but agents,—most necessary ones certainly,—to convey it from the mind and eye on to the paper. It must also be observed that the power of fully appreciating, as of producing, beautiful works is not acquired by study of the law, or of mathematics, or even of campanology, but by careful and loving study of the beautiful in nature and art, and an earnest desire to apply the principles learned to our own work.

I have endeavoured, in putting down these few thoughts for your consideration this evening, to touch upon some of those matters which, whether as architects or students, should ever be uppermost in our thoughts. It is both pleasant and profitable for each one of us, amid the hard matter-of-fact details of everyday life, to study and think them out for himself.

The message of art always remains the same; there is nothing new in what I have said,—scarcely, I fear, in the manner of telling it,—but it is, I may hope, not without some use to have again reminded you of these things. I cannot do better than conclude with the words of a great artist:—

"Excellence is never granted to man but as the reward of labour. If you have great talents, industry will improve them; if you have but moderate abilities, industry will supply their deficiency. Nothing is denied to well-directed labour: nothing is to be obtained without it."

Mr. Stannus, in moving a vote of thanks to Mr. Hayes for his address, referring to the so-called "Queen Anne" style, said it was quite true that, as the President had stated, it had a wide range of design,—far too wide a range, indeed,—and one which, it was to be hoped, would be considerably narrowed before long. He thought there were already signs of a movement in the direction of limitation, some of the men who had set the fashion going being probably alarmed at the terrible Frankenstein which they had caused to arise. Having passed through the dregs of corruption and dirt, it was to be hoped that it would gradually be purified and led into that style of pure Classic to which they were all tending, and to which they, with some exceptions, looked forward with a very great deal of pleasure. ("No, no.")

Mr. S. Flint Clarkson seconded the motion, which was supported by Messrs. J. Osborne Smith, Aston Webb, and Cole A. Adams, and carried by acclamation, Mr. Hayes making a few observations in reply.

A NOTABLE REREDOS.

We have had an opportunity of seeing, at the studio of its sculptor, Mr. G. W. Seale, Coldharbour-lane, Brixton, a reredos which is noteworthy not only on account of the elaborateness of its design and the excellence of its workmanship, but from the probability that it is the largest work of the kind executed in this country since the Reformation. It has been modelled and executed by Mr. Seale from drawings made by Mr. J. D. Sedding, architect, of Charlotte-street, Bedford-square, and its total cost will be about 2,000*l*. It is about to be erected in the Church of St. Clement, Bournemouth, at the cost of Mr. J. F. Christy, in memory of his son, Lieut. Edwin Christy, of the 8th Hussars, who, after passing scatheless through the recent Afghan war, had the misfortune to meet with a fatal accident while playing a polo match in India about two years ago. The reredos consists of a central portion, which will be erected beneath the east window, flanked on either side by a structure of panelling and canopy-work rising to the springing-line of the arch of the window. The central portion,—the reredos proper,—is about 15 ft. high from the level of the footpace, and 13 ft. in width. Above the re-table there is a long panel of sculpture in alto-relievo, representing the Adoration of the Shepherds and the Adoration of the Magi, combined in one subject. This panel is 11 ft. 4 in. long and 4 ft. 6 in. high, the figures contained in it being about two-thirds full-size. Above the framework enclosing the panel is a row of niches, containing the twelve apostles,—these figures being on a much smaller scale than those in the panels. Above this row of niches there is a boldly-coved cornice, vaulted on its under-side, and surmounted by open brattishing. It has been sought to treat the subject of the large panel in a natural though withal a devotional manner, and the same sort of pictorial effect as is seen in Adam Krafft's sculpture at Nuremberg has been aimed at, with no small degree of success. This panel is in Caen stone, but the remainder of the central part of the reredos is in alabaster. At each end of the panel is a triple shaft; one of these shafts is surmounted by a figure of the Blessed Virgin, and the other one by the angel Gabriel announcing the Incarnation. In the centre of the upper frieze is a boldly-projecting canopy, which will come over the altar-cross, after the manner of the one at Winchester Cathedral. The flanking portions of the reredos will rise, as we have said, to the level of the springing of the east window,—*i.e.*, to the height of 26 ft. 6 in., the aim of the architect having been to attain somewhat of the effect of the fine examples at Winchester, St. Mary Overy, St. Alban's Abbey, and Christ Church, Oxford, where, as in the work now under notice, the reredos extends across the whole width of the church. Each of the flanking portions is composed of panelling, divided into three vertical spaces in each stage by moulded shafts, the central compartments being larger than the outer ones. These central spaces contain, one above the other, two large and prominent figures on each side of the chancel, standing in canopied niches. The smaller spaces on either side of the large spaces contain a number of smaller niches filled with figures of saints,—all characteristically treated and with their several emblems. The dado next the ground is of the same height as the altar, and is divided into compartments corresponding with those in the upper part. Under the cresting of the dado is the inscription describing the purpose of the memorial, and on the right-hand side is a square panel containing a figure of the deceased on horseback in his regimental dress. The four large figures we have mentioned are those of St. Edwin, St. George, St. Edmund, and St. Alban. There are in all twenty smaller figures. We may add that the whole of the work was modelled by Mr. Seale. Mr. Philip Westlake supplied the cartoons for the large figure subjects, so that they might correspond in scale with the figures in the stained-glass window which is also being given to the church by Mr. Christy in memory of his son. The style is Early Perpendicular, corresponding with that of the church, of which Mr. Sedding was the architect.

ARCHITECTS AND SURVEYORS.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

At the annual meeting and *conversazione* of this Association, held on the 7th inst., the President, Mr. J. J. Bateman, delivered an address, in which he particularly considered "that portion of our professional practice connected with the duties of a surveyor," and he divided the subject into,—first, those surveyors' duties immediately connected with the practice of an architect; second, those connected with the practice of a surveyor. Connected with the practice of an architect were land surveying and levelling, landscape gardening, development of building estates, and legal knowledge respecting easements, Acts of Parliament affecting building, law of contracts, dilapidations and fixtures. Connected with the practice of a surveyor were valuations of property, parochial assessment and compensations. The more important of these points he discussed in detail. Respecting landscape gardening, which was, he said, a study essential to the architect, he addressed to the students a few hints upon suburban gardening. The house was to be placed upon a well-developed terrace. They were not to be too ambitious in the style of the garden; the simpler the plan, the greater its effectiveness. Unnecessary divisions, multiplicity of flower beds, numerous walks, and vases and pedestals (except in special situations) were to be avoided. The surface of the ground would determine the character of the plan, whether "rectangular" or "curvilinear." Without special observance of aspect, no garden arrangements would be successful. Lastly, the main approach or carriage-drive should be planned so as to give the greatest amount of privacy. Greater scope for design would be afforded by country houses, where the distant view, the introduction of water, the terrace flower-garden, the grouping of timber, garden architecture, in fountains, picturesque bridges, arbours, and other ornamental buildings, balustrades, and numerous other embellishments, might tend to the one object of heightening the architectural effect of the mansion. To the branch of his subject classed as "Legal Knowledge," Mr. Bateman devoted a large part of his paper. In "easements" which were prescriptive rights acquired by time and use, the most important was that of light. No subject connected with the architect's profession was more fruitful of vexatious litigation than rights of window-lights, as few buildings of importance could be erected in the centre of a closely-built town without their architects being embarrassed by the obstructive interference of adjoining owners. The strict right of property entitled the owner to so much light and air only as fell perpendicularly on the land. Happily for Scotch architects the law of Scotland was so limited; but in England the right of light in a lateral direction was protected and called an easement if it had existed for twenty years. when it became an "ancient" light. It was, however, a moot point if railway companies could prevent adjoining owners from the enjoyment of light over a railway. The law permitted the opening of windows over adjoining land, but the adjoining owner could obstruct such windows within twenty years by an erection on his own land. He was of opinion that the repeal of the law permitting windows to open over adjoining land might very profitably be considered. At present the law admitted of an encroachment on the rights of adjoining owners, which by lapse of time became an easement or legal right. It certainly appeared to be a legal anomaly to admit a right to one party which might be cancelled by another, although the cancelling might necessitate great inconvenience, expense, and loss. It was true easements of light might be obtained by building within the boundary of the property, and this would be to exercise a just and equitable right of property. An ancient light could not be prejudicially affected, and the Courts had frequently ruled that no obstruction should exceed an angle of 45 degrees; but scarcely any two cases of damage to light were alike. It was a wise precaution to erect a temporary obstruction before proceeding with the permanent work, as a test of what, if any, damage would be caused. Another easement to which Mr. Bateman referred was that of "support," which entitled an owner to the lateral support of adjoining land; whilst for the support of buildings a twenty years' user must have been acquired. Referring to Acts affecting building, the President said it was much to be regretted that there was not in Birmingham a comprehensive Building Act, which would relieve architects of considerable difficulty in dealing with party-walls and other vexatious questions, and at the same time ensure the erection of more uniformly substantial property. He recommended the study of the Metropolitan Buildings Act, which regulated all building operations in the metropolis to secure sound construction and protection from the spread of fire. Town Improvement Acts, where they existed, were also necessary to be studied. As to the Artisans' Dwellings Act, he remarked that it might fairly be questioned whether the Corporation had legitimately used this Act in forming Corporation-street. He referred to this to correct any erroneous impression that this Act was intended to be used for the purposes of street improvement instead of the improvement of artisans' dwellings.

THE TRANSIT OF LANCASHIRE COTTON GOODS.

Sir,—It is satisfactory to know that the great importance of the question of reducing by some means the cost of inland conveyance of Lancashire cotton manufactures is at last receiving the recognition it deserves. To fully understand this importance it is only necessary to examine the statistics relating to the increase of production of the cotton manufactures of our foreign, and especially American, competitors. The inland position of the cotton industry of Lancashire owes its origin to its peculiar introduction and development. The exiled Flemish weavers, driven from their homes by the revocation of the edict of Nantes, were welcomed by the fustian-weavers of Lancashire. Years after, thanks to the genius of a galaxy of inventive weavers, Lancashire could supply not only home consumers, but a greater part of those abroad, with calico, and the Lancashire manufacturers had, up to the time of the great Exhibition of '51, very few, if any, foreign competitors, and at that time it was immaterial whether their mills were inland or on the seaboard. But now all this is changed, and the change may be partly attributed to our too great readiness to exhibit the products of British ingenuity before the imitative eyes of foreigners, and now Lancashire manufacturers will have to face ever-increasing foreign competition. Compared with the Americans, it will be readily conceded that the Lancashire manufacturers are at a great disadvantage. The former are now commencing to erect their mills actually in the cotton fields, so that the raw material can be cultivated and manufactured *in situ*. The cotton is then, at little expense, transmitted by rail or river steamer to the ocean liner, to be carried direct to all parts of the world, and no doubt the enterprising Americans will eventually utilise, by electrical transmission, the great natural sources of power so common in their land. And then the fertile and luxuriant character of the American soil allows them to obtain comparatively cheap labour. The Yankee knows his natural advantages over his Lancashire competitor, and by the increased production of American cotton goods he is proving that he intends to utilise them, and it must be confessed that, naturally selected, the Southern States of America are pre-eminently adapted for both the cultivation and the manufacture of cotton.

The Lancashire cotton manufacturer has all the expenses of river and ocean shipments, transit by road and rail, loading and unloading various times, before he can even touch the raw material. And then there are the brokers' charges. These latter, however, the Lancashire manufacturers appear determined to remove, and some of the cotton-spinners of Oldham have already banded themselves together in order to buy cotton direct without the intervention of the middlemen or cotton brokers. Several important schemes have lately been announced, having the aim of reducing the cost of inland transit of the Lancashire manufacturers. Certainly the most important of these schemes is the suggested ship-canal, which, if carried out with vigour to a successful issue, would ensure at least a moderate degree of prosperity for the cotton trade of Lancashire for many years to come. But this is not all. Its effect upon other Lancashire industries,—especially the chemical and iron,—would be equally as beneficial, and in time its banks might become studded, like those of the Clyde, with works of the textile, iron, and ship-building industries.

The importance of a seaboard position for other industries than that of cotton is, in the face of foreign competition, beginning to show itself, and Messrs. Cammel are, with commendable enterprise, removing their ironworks from Sheffield to a seaboard position in Cumberland.

Another scheme for improving the means of conveying Lancashire manufactures is that described as the Lancashire plateway. This scheme appears, however, to be too crudely developed to deserve any attention. Would it not be possible and better to connect the tramways existing in nearly all the Lancashire towns with the railways, so that the trucks of a light and special character could be drawn at once, from the railway to the mill or the ship? If the railway companies could only see that, by high and excessive tariffs, they were driving the staple trades out of the country, they might make some endeavour to reduce their tariffs to something like a reasonable proportion, otherwise they will discover when only too late that they have been perpetuating the folly of killing the hen that laid the golden egg. The future of Lancashire will be seriously influenced for good or evil by the degree of energy devoted to the work of improving at once the means of inland conveyance of her manufactured goods, and it behoves all Englishmen to wish success to any scheme that will ensure this desideratum.

B. H. Thwaite, F.C.S.

LEEDS ARCHITECTURAL SOCIETY.

The following syllabus of papers is issued for session 1882-83:—

1882.

Nov. 6th.—Opening Address by the President, Mr. F. B. Fraser, F.R.I.B.A., and Annual Report.

Nov. 20th.—"Constructional Ironwork, as applied to Architecture," by Mr. F. Campin, C.E.

Dec. 4th.—"The Foundation of Art in Architecture," by Mr. E. R. Robson, F.S.A., F.R.I.B.A., Architect to the London School Board.

Dec. 18th.—The *Conversazione*.

1883.

Jan. 8th.—"The Place of Tradition in Modern Design," by Mr. J. D. Sedding, F.R.I.B.A.

Jan. 22nd.—"Kirkstall Abbey," by Mr. J. Wreghitt Connon, F.R.I.B.A.

Feb. 5th.—"Art Folinge," by Mr. J. K. Colling, F.R.I.B.A.

Feb. 19th.—"Wakefield Town-hall," by Mr. G. B. Bulmer.

March 5th.—"Hindrances," by Mr. J. Honeyman, F.R.I.B.A., President of the Glasgow Society of Architects.

March 19th.—"Recollections of Flemish Architecture," by Mr. William H. Thorp, A.R.I.B.A.

April 2nd.—Members' *Soirée*.

GLASGOW INSTITUTE OF ARCHITECTS.

PROPOSED BUILDING ACT.

At an extraordinary general meeting of the Glasgow Institute of Architects, held to consider the new Police Bill,

Mr. Wm. Maclean, writer, the secretary, read the report of the Council of the Institute on the Police Bill. The report contained the following passages:—

The Council of the Glasgow Institute of Architects having considered the sections of the new Police Bill from 307 to 392 inclusive, relating to the jurisdiction and procedure before the Dean of Guild Court, Master of Works, his powers and duties; streets and courts, sewers and buildings, their erection, alteration, and use, are unanimously of opinion that these sections should be omitted from the Police Bill, and that all necessary building regulations should be embodied in a Building Act applicable not merely to the city, but also to the suburbs. The growing need for such an Act to regulate building operations in this large city has been apparent to the architects of Glasgow for many years. In 1878 and 1879, in particular, the subject was discussed at numerous meetings, and a deputation from the Institute had several opportunities of conferring with a committee of the Town Council which had this matter under consideration. At that time it seemed probable that the different municipalities would co-operate with the view of promoting a general Building Bill applicable to the whole of Scotland,—a course which the Institute warmly approved and recommended,—but the scope of the measure now under consideration proves that the Town Council has entirely abandoned all idea of proceeding with a Building Bill either in conjunction with other corporations or separately. Instead of that they propose to mix up building laws with the miscellaneous provisions of a Police Bill, in such a way that the original mistake of so doing

shall be perpetuated and aggravated. . . . . With the view of bringing the opinion of the Institute before the Town Council in a formal manner, your Council submit for the approval of the general body, the following resolutions:—1st. That it is expedient that the clauses relating to buildings and the jurisdiction of the Dean of Guild be omitted from the Police Bill. 2nd. That the laws relating to buildings should be consolidated and amended by a new Act dealing with that special subject, similar generally to the Metropolitan Buildings Act, and applicable to the suburbs as well as to the city of Glasgow. 3rd. That inasmuch as it is impossible for the Town Council or the ratepayers either to consider the advantages of the course now proposed by the Institute, or the merits of the draft Bill now published, before the day on which Bills for next session must be lodged, therefore the Institute protests against the Town Council giving notice of their intention to proceed with the Bill at this time. 4th. That a copy of the foregoing resolutions be forwarded to the Town Council.

The report and resolutions, on the motion of the President, Mr. James Thomson, seconded by Mr. James Salmon, and supported by Messrs. James Sellars, Jno. Hamilton, and Campbell Douglass, were unanimously adopted.

LIVERPOOL ENGINEERING SOCIETY.

At a meeting of the above Society, held at the Royal Institution, Colquitt-street, on Wednesday evening, the 8th inst., Mr. F. B. Salmon, president, in the chair, a paper, by Mr. C. E. Hannaford Shiel, M. Inst. C.E., on "The Testing of Materials for Use in Engineering Structures," was read. In the paper the author, for want of space, dealt with only two classes of materials, viz., limes and cements, and metals. He selected these on account of there being many differences of opinion with respect to some of the methods of testing, and therefore will, he hopes, leave more matter for a discussion thereon. After relating briefly the usual tests applied to hydraulic limes, with a view of ascertaining their quality, he passed on to Portland cement. In dealing with this material, reference was first made to the different methods of manufacture, after which he described at some length the various tests to which it should be subjected, including comprehensive and tensile strength, fineness of grit, weight, colour, &c., and then pointed out that by actually breaking a sample by either tension or compression is given the most reliable information of its quality. He then described, and showed by the aid of diagrams, the various forms of briquette which have been used at different times, giving the preference to the last form introduced by the Metropolitan Board of Works as being the one he believed calculated to give the most accurate results. He then entered at some length into the various methods of making the briquette, the amount and nature of the water found most beneficial under different conditions, and other details, and concluded this section with some remarks on the utmost necessity in comparing the relative strengths and other properties of two or more samples, that all the details of gauging and manufacture should be as nearly as possible identical. In dealing with the section on metals, the author described the various but usually applied tests to cast and wrought iron and steel, pointing out several tests which, although occasionally resorted to, are, in his opinion, to be condemned. In referring to the forge test of the last two metals, he quoted the latest tests required by the Admiralty for these metals, and concluded this section with a review of the connexion which exists between the chemical and mechanical quatities of iron and steel.

The Society of Arts' House, Adelphi.—During the recess the Society of Arts' House has been renovated under the superintendence of Mr. E. C. Robins. The great hall has been redecorated in the style of the work of the Brothers Adam, raised mouldings being added to the cove, well accentuated in gold and colour, with the effect of increased height. The hall has also been ventilated by the introduction of fresh air over warm-water pipes, and the extraction of expired air by a shaft 3 ft. square, heated above the level of the meeting-room with hot-water pipes. The result is expected to be the change of air in the meeting-room three times in the hour, with the maintenance of 60° of temperature, Fahr. The lower hall has also been decorated and ventilated in a similar manner. The electric light has been introduced, and is in course of regulation.

COMPENSATION CASE.

CHAMBERS *v.* METROPOLITAN AND DISTRICT RAILWAY COMPANIES.

The claimant in this case (tried in the Lord Mayor's Court before the Recorder and a special jury) sued for compensation in respect of his interest in premises held by him on lease, situated in Black Raven-court, Seething-lane, and which were required by the railway companies in consequence of the extensions now being carried on.

The claimant is a wine-merchant. He took the lease in March, 1880, for twenty-one years at a rental of 70*l.* per annum. He had expended 300*l.* in repairing the premises. They were now in good repair, and in consequence of their proximity to the markets, of considerable value. He had let off the house at a yearly rental of 130*l.* He now claimed 700*l.* as compensation.

Mr. S. Chambers, the claimant, stated that he obtained the lease of the house in question on March 25th, 1880. He had expended 300*l.* in repairs. He had let the house under an agreement at a rental of 130*l.*, the lessor paying taxes. Cross-examined: He took the house for a speculative purpose. When he took the lease he did not know the railway companies were coming.

Mr. R. G. Bishop (of the firm of Messrs. Smallpeice & Bishop), surveyor, Godliman-street, said he had a large experience in the district in which the house in question was situated. He superintended the final repairs which had been done, and gave the final certificate. His valuation amounted to 676*l.* 10s.

Mr. J. F. Field, surveyor, Bread-street, valued the premises as worth, on compulsory sale, 712*l.*

Mr. E. Eason (of the firm of Messrs. Reynolds & Eason), surveyor and auctioneer, Bishopsgate-street, said that in his opinion 704*l.* was the fair value of the property.

Mr. Pollock, on behalf of the companies, called Mr. Lang (of the firm of Messrs. Jones, Lang, & Co.), auctioneer, King-street, Cheapside, who valued the property at 302*l.* 10s.

Mr. George Low, architect and surveyor, Basinghall-street, gave as his valuation 302*l.* 10s.

Mr. R. Ritchie, architect and surveyor, Parliament-street, said he acted for the railway companies in the acquisition of the property. He considered the value of the property to be 300*l.*

The Recorder having summed up, the jury were of opinion that the plaintiff was entitled to 484*l.* as compensation.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

5,250. W. D. Scott, Moncrieff, and W. Dodds, London. Valve apparatus for supplying baths, &c. Nov. 3, 1882.

5,259. A. E. Crisp, London. Window-fasteners. Nov. 4, 1882.

5,266. R. Chapman, Patricroft, and J. Hibbert, Manchester. Apparatus for closing doors and windows. Nov. 4, 1882.

5,274. A. M. Clark, London. Means for attaching hat-pegs, curtain-holders, brackets, &c., to walls and ceilings. (Com. by MM. Gollot Frères, Paris.) Nov. 4, 1882.

5,283. W. Kennedy, Glasgow. Translucent plates as substitutes for glass in roof-lights, &c. Nov. 6, 1882.

5,310. J. G. Whyte, Bo'ness. Construction of cooking-ranges, &c. Nov. 7, 1882.

5,347. R. Crane, London. Smokeless stoves and grates. Nov. 9, 1882.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Nov. 7, 1882.

3,170. T. G. Webb, Manchester. Pavement lights, &c. July 5, 1882.

4,495. W. R. Lake, London. Manufacture of bricks. (Com. by H. R. Dickinson, Hamilton, U.S.A.) Sept. 20, 1882.

5,165. A. M. Clark, London. Gas cooking stoves or ranges. (Com. by W. W. Goodwin, Philadelphia, U.S.A.) Oct. 30, 1882.

Nov. 10, 1882.

3,140. T. French and J. Monks, Manchester. Ladder tapes for Venetian blinds. July 4, 1882.

3,242. J. Carr, Hulme. Tape ladders. July 8, 1882.

ABRIDGMENTS OF SPECIFICATIONS

Published during the Week ending November 11, 1882.

1,466. W. L. Fison, Stowmarket. Perforated tiles. March 27, 1882. Price 2d.

The undersides of these tiles are strengthened by parallel ribs. (*Pro. Pro.*)

1,522. J. B. Denton, London, and G. Butler, Turnham-green. Apparatus for flushing sewers, &c. March 29, 1882. Price 6d.

A syphon is fitted in a tank, to the long leg of which is connected a valve governed by a tipping-box or bucket in a smaller chamber contained in the tank. As the tank overflows it fills this chamber, and this in turn fills the tipping-box. This then raises the valve and water flows into the long leg of the syphon, setting up the action, which empties the tank into the sewer.

1,544. C. F. Grimmett and J. Cook, Birmingham. Curtain suspenders. March 30, 1882. Price 2d.

The rings have a clip, between the jaws of which the curtain is suspended. (*Pro. Pro.*)

1,568. F. Render, Manchester. Manufacture of bricks, tiles, &c. March 31, 1882. Price 2d.

To make firebricks, &c., silica brought to a gelatinous state is added to the ground clay. (*Pro. Pro.*)

1,575. W. R. Lake, London. Metallic roofing shingles. (Com. by R. Seaman, New York, U.S.A.) March 31, 1882. Price 6d.

These are diamond-pointed shingles, which have a central longitudinal rib formed in them, which creates a groove on their undersides. These grooves are widest at the points of each shingle, and therefore the rib of one shingle will enter the rib of the next shingle above it. The parallel edges of each shingle are also turned up to dovetail in the groove of the central rib.

1,584. G. L. Shorland, Manchester. Fireplaces or grates and stoves. April 1, 1882. Price 6d.

A box is fixed behind the front bars of the grate for warming air. The inlet pipe of this box conveys air from outside the building, and delivery pipes from the upper part of the box deliver the warm air into the room, &c. The gases of combustion are made to pass again through the fire to two flues, which are fitted with dampers.

1,589. M. Meuge and H. Krause, Berlin. Apparatus for painting the interior of houses, &c. April 1, 1882. Price 2d.

For painting floors a colour receptacle is attached to the lower end of a handle carrying a brush through openings in which the colour falls on the floor, and is distributed by the brush. (*Pro. Pro.*)

1,596. W. Johnson, Liverpool. Latches or locks. April 1, 1882. Price 2d.

The handle is fastened by a slotted washer catching in a groove in the spindle. A cam is placed on the spindle so that the bolt can be drawn by pressing or pulling the handle instead of turning it round. (*Pro. Pro.*)

1,609. F. H. F. Engel, Hamburg. Parquet flooring. (Com. by F. H. Schmidt, Altona, Prussia.) April 3, 1882. Price 2d.

The veneers are cut to shape by a circular cutter, the supporting frame of which is provided with a bed on which is a sliding table. This table is moved so that the saw will cut the veneer exactly. The portions of veneer are then arranged and glued on the ground-board and a press with two jaws fastens them to the board. (*Pro. Pro.*)

1,652. J. J. Wheeler, London. Curbs of roads and footpaths. April 5, 1882. Price 4d.

These are made of artificial stone, granite, or iron, and an internal way or channel is formed in them for conducting wires for electrical purposes.

1,655. H. Conolly, London. Water-closets. April 5, 1882. Price 4d.

The overflow arm communicates with the flushing rim in such a manner that every time the closet is flushed part of the water will pass through the overflow arm and seal the trap.

1,694. C. F. Grimmett and J. Cook, Birmingham. Cornice-poles, curtain-suspenders, &c. April 8, 1882. Price 6d.

A wire is coiled round the cornice-pole, half of the coil being right-handed and half-left-handed. From this the curtain is suspended. When the pole carrying the wire is revolved the curtain is carried backwards or forwards. Several modifications are shown.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

NEW BOARD SCHOOLS IN LONDON.

The London School Board have given notice of their intention to procure sites for the erection of forty-four new school buildings, in addition to 311 schools which they have already erected in different parishes within the Metropolitan area. The building of these proposed new schools will involve the removal of a considerable number of houses, and the consequent displacement of a numerous population. In the Middlesex portion of the Board's area, twenty-eight new schools are proposed to be erected. Of this number, eight are in the Chelsea division, five of which are in the parish of Fulham, two in the parish of Hammersmith, and one in the parish of Chelsea. The sites to be purchased for these proposed schools cover a total area of eight acres, and involve the demolition of thirty houses. Without continuing further the detail, the aggregate area covered by the sites of the several proposed schools is upwards of forty acres, and the number of houses required to be taken down 310, involving the displacement of a population estimated at about 2,000 persons.

THE SERIOUS LANDSLIP AT THE DENMARK HILL RAILWAY STATION.

THE great landslip at Champion-place, on the south side of the Denmark-hill station of the South London Railway, the property of the London and Brighton Company, now threatens to be more serious than it has been within the last few months, during which a large number of men have been at work repairing the damage done to that part of the cutting on the south-east side of the station.

The railway retaining-wall is immediately to be taken down, as it is at present in a highly dangerous condition, whilst it will also be necessary to take up the roadway in Champion-place for the purpose of re-constructing the sewer, and also in order to restore the road to its former level.

Works already done have been executed by the London and Brighton Company, under the immediate superintendence of Mr. Banister, their engineer, at a cost of between 7,000*l.* and 8,000*l.*; and it is expected that a further large outlay will have to be incurred in the necessary works on the south-west side of the station.

It is not improbable that the matter may lead to some litigation between the railway company and the Camberwell Vestry, the railway company apparently being of opinion that the slips have been caused by the imperfect drainage of the roadway above, under the control of the Camberwell authorities.

NEW WATERING AND SANDING MACHINES IN LONDON.

SOME of the metropolitan vestries have just introduced what appears to be an improved and more expeditious system of watering and sanding the public thoroughfares. Last week the Works Committee of the Westminster Vestry met for the purpose of witnessing the trial of two new watering and sanding machines, which have recently been invented and patented by Mr. Robert Willacy, of Preston. The trial took place in the neighbourhood of the Abbey, between three and four o'clock in the afternoon of Wednesday, and was witnessed by a large body of spectators, in addition to the committee of the vestry. The sanding-machine was first tried, the trial commencing at the door of the Vestry Offices in Great Smith-street, and thence coming round in front of the Abbey along Parliament-street, and into Bridge-street. One of the advantages of the invention appeared to be the great width of roadway sanded, 30 ft. in width being covered at one journey, and Bridge-street, which is about 60 ft. in width, being covered during the first and return journeys in a few minutes. The watering-machine was next tried, and distributed the water at one movement to the extent of 32 ft. in width. The trials showed that streets of ordinary width can be entirely covered by water or sand without doubling, thus saving much time and expense. The trials were so satisfactory to the Westminster authorities that they decided upon adopting the sanding-machine, which the inventor has been instructed to supply. The committee expressed themselves equally satisfied with the watering-machine, but have not yet adopted it, as they are at present under a three years' contract for the machines at present in use.

LIABILITY OF ARCHITECTS GIVING ORDERS FOR GOODS.

METCALF *v.* MYRES.

IN this case (heard in the Preston County Court on the 25th ult., before Mr. W. A. Hulton, judge), Messrs. Metcalf & Dilworth, hot-water engineers, Preston, sued Messrs. Myres, Veevers, & Myres, architects, Preston, for 32*l.* 10s., the value of a hot-water heating apparatus.

The defendants were a firm of architects in Preston. They had to do with the erection of some Local Board offices at Walton-le-Dale, and in October, 1880, one of the defendant firm, Mr. T. H. Myres, waited upon one of the plaintiffs, Mr. Dilworth or Mr. Metcalf, and requested to be shown some heating apparatus for the offices. The result of this request was that a tender was sent in to Messrs. Myres, Veevers, & Myres. At that time the plaintiffs were not informed who was the contractor for the erection of the offices. The whole of the correspondence on the subject, the interviews and arrangements which took place, had been made with Mr. T. H. Myres and the firm. The work was completed, and then application was made for payment to Mr. Myres, and he believed that at Mr. Myres's request Mr. Metcalf saw Mr. Ward, the builder, and asked him for payment. This was done expressly at the request of Mr. Myres, and he told Mr. Ward that he should be glad if he could see his way to pay him, but if not, he should look to Mr. Myres for payment of the amount. The question was whether or not they could recover the amount from the architect.

On the 7th inst. his Honour delivered the following written judgment:—

This action has been brought to recover 32*l.* 10s., the price of a heating-apparatus and other goods, furnished by the plaintiffs to the Local Board offices at Bamber Bridge, under the following circumstances:—In the year 1880 the Local Board of Walton-le-Dale were erecting new offices at Bamber Bridge, and they entered into contracts with various persons with relation to the building of such offices. The defendants in the present action acted in the erection of the offices as architects for and on account of the Local Board. It was found necessary that a heating-appartus should be set up in the offices, and the plaintiffs tendered for it, and, after a reduction in the price, the tender was accepted by the defendants, and the work was proceeded with. During the progress of the work, the boiler to the apparatus was changed, and a more expensive boiler was supplied by the plaintiffs on the order of the defendants. In the same manner an ornamental cover to a coil in one of the rooms in the offices was ordered by the defendants, and supplied by the plaintiffs. It appears that a contract for the supply of a heating apparatus to the offices had been entered into by one Mr. Ward with the Local Board. It further appeared that the contract price of the apparatus had been paid to Mr. Ward, and the question now is,—for Mr. Ward is unable to pay,—whether the defendants are liable. I think they are. It was the duty of the defendants, under the circumstances, to be very careful to leave no doubt on the minds of the plaintiffs as to the parties with whom they were dealing; and if any other persons than the defendants were concerned in the contract, notice of that fact ought to have been expressly given, and in the fullest terms, to the plaintiffs. In this case, both the plaintiffs positively asserted that they did not know of Ward's contract till long after the apparatus was finished. And though Mr. Myres stated that he had informed the plaintiffs of the contract, yet the communication was evidently not sufficient to give the plaintiffs the notice required. There was no question at the hearing as to the liability of any other party. I do not consider that the plaintiffs can be held to have elected to have taken Ward as their debtor. And as there is no doubt that the contract was made and the orders for the goods given by the defendants, and no authority from any other party to do so was shown to exist in the defendants, I must hold that they are liable to the plaintiffs, and that this action is maintainable. A question arose at the hearing whether the tender made by Ryley had the effect of altering the position of the parties. I think it had not. The whole sum tendered was offered to be taken on account, and the offer was refused. The effect of the tender, if any, was thereby put an end to. I direct the verdict to be entered for the sum of 31*l.* 10s., the amount of the sum due for the heating apparatus being reduced, according to the contract agreed upon.

PROVINCIAL NEWS.

Gorton, Manchester.—A large block of general offices is now being erected for Messrs. Beyer, Peacock, & Co., engineers, at Gorton Foundry, opposite the Manchester, Sheffield, and Lincolnshire Railway works. The building occupies an area of 224 ft. by 44 ft., by about 42 ft. in height, and will be faced with red pressed bricks, having moulded arches and cornices; stone string-courses, cappings, &c.; and all the internal woodwork will be of pitch pine, varnished. It comprises a very complete range of private offices, a large office for clerks on ground-floor, 70 ft. by 40 ft., by 16 ft. high, with separate room for cashier and fireproof safe; and on the first floor a general drawing-office, 90 ft. by 40 ft., by 24 ft. high, with open roof and glazed central double light in addition to the side windows; also a separate tracing-office, photographing-room, model-room, &c. Arrangements have been made for warming and ventilation, on Messrs. Haden's system, for which a special smoke and ventilating shaft is provided at one end, rising to a height of 80 ft.; and at the other end of the buildings will be a clock-tower, 90 ft. high. Messrs. T. Bates & Co., of Droylsden, are the general contractors for the work, which is being carried out according to plans and directions of Messrs. Worthington & Elgood, architects, 110, King-street, Manchester.

Ancoats, Manchester.—An important improvement is being carried out by the Manchester Corporation in connexion with the bridge crossing the canal in Ancoats. The bridge has been entirely reconstructed from the designs of Mr. Allison, the city surveyor, so as to give a roadway 60 ft. wide and to cut off an awkward bend. Some difficulty has been experienced in carrying out the work in order to avoid encroaching upon the towing-path beneath or an interference with the canal locks adjoining, but this has been successfully overcome. A rearrangement of the water-main, which was previously carried on the parapet outside the bridge, has also been necessary, but by providing a special casting for the main, of an oblong section, it is now supported underneath the bridge between the two main girders.

Salford.—The Salford Union Infirmary at Hope, near Eccles, has been opened for use. The buildings have been erected on the pavilion principle, and a continuous corridor, 850 ft. long and 10 ft. wide, connects the several pavilion blocks with each other and with the administrative block which stands in the centre, so as to be easy of access from the several departments. There are two double-pavilion blocks, which, together, will contain 400 patients, and four single blocks, each designed to accommodate 100 patients. Capacious day-rooms and other apartments have been provided. The total cost has amounted to 60,000*l.* The architect is Mr. Lawrence Booth, of King-street, Manchester, and the contractor, Mr. W. Southern, of Salford.

Bradford.—Deputations have waited upon the First Commissioner of Works, Mr. G. Shaw-Lefevre, and the Postmaster-General, Mr. Fawcett, on the subject of a site for a proposed extensive new post-office for the town of Bradford in Yorkshire. The deputation profess themselves encouraged and satisfied with the reception given by both Ministers to their representations.

Hartlepool.—Last week witnessed not only the completion of the quay-wall here, 800 ft. in length, on the west side of the new dock, but also the completion of the extensive new fish-curing houses at the north-east corner of the Slake. There are two large smoke-houses, cleaning, and salting-sheds, and every appliance for the carrying on of a business next season, which will employ about sixty men, as well as a number of females. The ice-houses are also complete and ready for use next season. Good progress is also being made with the new graving dock.

Stockport.—An exhibition of gas appliances for cooking, lighting, heating, and other purposes has been opened here, in the large weaving-shed of Spring Bank Mill, Wellington-road South, Stockport. With the view of stimulating and encouraging exhibitors and inventors the promoters offered gold and silver medals for the best and most economical cooker for working men's homes; for the best and most economical gas cooking-stove adapted for family use; for the best and simplest apparatus for preparing flour to make bread, and for the baking of it by gas; for the best application of gas for warming and ventilating purposes; for the best regulator or governor to economise the consumption of gas; for the best possible tube for the transmission of gas which will not foul; and for the best and most economical lighting of public lamps with single flame, and also with combination of flames.

To Preserve Old Country Mansions from Fire.—In *Baily's Magazine* for this month, Mr. John Birch, architect, who is restoring Everleigh House, in Wiltshire, for Sir John Astley, bart., destroyed by fire at Christmas last, makes the following suggestions for the prevention of such calamities, and for bringing the risk of fire within reasonable limits:—

"Have all flues, fireplaces, and hearths carefully examined, and all timbers too near the fires removed. Carry up the solid internal walls through the roof to a sufficient height to divide the building into sections, and so prevent an extension of the conflagration, and if possible to shut off each by sheet-iron doors, so much the better; a water-tank over each portion is indispensable, and ought to be fed from an elevated water-tower, worked by steam power. This arrangement would ensure a constant and unfailing supply to the several tanks, and the contents of the whole might be brought to bear on any one portion of the mansion. These tanks must be connected with hydrants and fire-hose on each floor, placed, if possible, in lobbies near the sheet-iron doors, and contiguous to the various staircases."

OBITUARY.

Mr. E. B. Stephens, A.R.A., the sculptor, died on the 10th inst. The deceased, Edward Bowring Stephens, was a native of Exeter, and son of the late James Stephens, a statuary. He was in his seventy-sixth year. Speaking at the banquet given in Exeter in his honour, on the occasion of the presentation of "The Deerstalker," the deceased sculptor said that "the Earl of Devon's father and Sir Thomas Acland's father, above all others, were the founders of his professional career, and his first friends, who helped him on cheerfully and hopefully to try and do big things, to represent that which was true, and to do that which was right." In the same speech he stated that his artistic life was begun under the guidance of the late John Gendall. He afterwards studied under the sculptor Bailey, and in 1843 gained the Gold Medal of the Royal Academy for an alto-relievo of "The Battle of the Centaurs and Lapithæ." He spent three years at Rome, and produced in succession, among other works, two groups,—"Satan Tempting Eve," and "Satan Vanquished," both of which were on view at the great Exhibition of 1851; "Eve contemplating Death," in 1853; "Group of Euphrosyne and Cupid," in 1856; and the "Angel of the Resurrection," in 1861. His grand portrait statue of Sir Thomas Dyke Acland, placed on Northernhay, was completed in 1862. He also executed for his native city the statues of Earl Fortescue, in the Castle-yard; John Dinham, on Northernhay; of Prince Albert, in the Memorial Museum; and of the Earl of Devon, in Bedford-circus. "The Deerstalker," which now stands at the entrance to Northernhay, was exhibited at the Royal Academy in 1876. This group in bronze is generally regarded as his *chef d'œuvre*, and the manner in which Exeter became possessed of it afforded to Mr. Stephens one of the happiest incidents in his life. The work was so greatly admired by a number of Devonians that they determined to secure possession of it for the sculptor's native city. A committee was formed for the purpose of obtaining subscriptions, and though the price put upon the masterpiece was not realised, Mr. Stephens's generosity did not allow a consideration of that kind to stand in the way.

PEVENSEY CASTLE.

SIR,—In an article on Pevensey Castle, in a recent number of the *Builder*, there appear to me to be two or three mistakes committed by "G. T. C." As I have not seen any comment upon them, allow me to draw your attention to them.

The plan, which appears to have been taken from the Ordnance Survey, is scarcely correct in some parts. The middle buttress on the west side is evidently a mistake of the engraver: it is probably a shed. The plan made by Mr. Figg, and published in the "Sussex Archæological Collections," shows all the discoveries more clearly. On it are shown the wall between the buttresses of the Decuman entrance, the postern on the north side, the remains of a Roman tower and parts of the wall on the south side, where there were discovered the remains of a narrow postern. The oblique postern on the south side of the Mediæval castle, with the sunken Roman tower in front of it, are also shown. In 1783 this Roman tower had a parapet remaining round the top of it, and on the courtyard side of the postern there existed a wall on each side of the passage to it (see Grimm's drawings in the Burrell MSS., Add. MSS. 5671).

It scarcely conveys a correct idea of the postern gateway in the Roman wall on the north side, to say it passes "obliquely through the wall." Instead of its being straight, the plan of it is *curved*, which is much more ingenious, and renders it more difficult to force an entrance.

I think there is a slight mistake in saying that the mouth of a sewer has been discovered in the south wall. There was a tradition that connected Pevensey Castle with the ancient house at Westham called Priesthawes by a subterraneous passage. Mr. Lower, to prove the fallacy of it, made some excavations, and found this supposed underground passage to be a drain constructed of large stones. It was 2 ft. 6 in. below the surface, 1 ft. 6 in. high, and runs about north-west and south-east. It is shown on Mr. Figg's plan. It could not have passed through the south wall without a considerable twist.

Instead of the facing of the north wall having been destroyed by the Northmen, it is more likely that it suffered most of its destruction when Pevensey Castle was used as a quarry, which was from about the end of the sixteenth century to about fifty years ago. In 1650 the materials of the castle were sold to John Warr, of Westminster, for 40*l.*, who did not avail himself of his power of destruction. The external facing stones at the bottom of the walls have been removed for building purposes; the difficulty of raising stones compared with merely knocking them down saved the foundation from destruction. Mr. Hartshorne, in his description of Porchester Castle, in the Proceedings of the Archæological Institute at Winchester, 1845, gives a description of the Roman method of forming foundations when the ground was unsuited for building purposes, and which explains why some of the wall has fallen.

I do not know what authority there is for extending an arm of the moat northwards towards the Roman tower; it is true there is a hollow in the ground, but a moat in this direction would have offered facilities for draining it if the attacking party obtained possession of the outer ward. The moat round the Mediæval castle could scarcely be supplied with water from the sea, as it is so much above the sea level. If the moat had been supplied from the sea instead of from a spring it would not be fit for drinking purposes, to which use it was applied, for in the Burrell MSS. in the British Museum (Add. MSS. 5,682) is the following:—

"In 1710 Rev. Jn. Wright, vicar of Pevensey, Chancellor, Resr. of Chichr. for ye benefit of his pshrs. who laboured under ye inconvenience of bad water, employd Jn Pursglove, of Hurstmonceux, for his workman to convey water from the castle moat to the town, in order thereto he found it necessary to his way under the castle wall, which is very high, and the thickness he computed to be ten feet. The foundation upon wch the superstructure is erected consists of piles planked over with slabs of extraordinary substance; but, notwithstanding the long Tract of Time since the Building this weighty fabrick, there appeared no decay in the slabs, only the colour changed from what we may suppose it when they were first laid down; the leaves of faggots found there were sound. Transcribed 1782 (from a paper in ye possession of Mr. Lambert, of Lewes) by W. B."

Mr. Lower and others have been of the opinion that the walls of the inner castle were built in the twelfth century, the towers added at the end of the thirteenth century. From what I could see of the building during the short time I was there, I could not discover any difference in the character of the work in the walls and towers, and any one examining the plan would, I think, say without doubt that they were built at the same time. The following extracts from Rolls will show that the towers existed previously to 1301, or they would not have required repairing:—

"The king intending to fortify it in 1250, commanded the sheriff to compel all persons who owed service to the castle to perform the same" (Pat. 34, H. III.).

"In 1264 Simon de Montford was to have 700 marks towards his expenses in besieging the castle. In the same year the Barons of Hastings, Winchelsea, and Rye were to try diligently to capture those enemies of the king, who endeavoured to fortify this castle with men and victuals."

"The sum of 12*l.* 11s. 3¾d. was allotted in 1304 for payment of the repairs of the hall and chambers of the castle done in 1301; 3*l.* 12s. 6d. for the repairs of the chapel in 1302; and 7*l.* 13s. 7d. for those of the great tower and granary tower. The sum of 2*l.* 2s. 10d. was allowed for the repairs of the wall of the inner ward in 1303; 2*l.* 12s. 11d. for the repairs of the stable; 18s. 0d. for those of the great tower; 1*l.* 6s. 5¾d. for those of the gate of the outer ward."

"In 1304, also, the sum of 12s. was allowed for the carriage of 200 round stones, fit for engines; from the store at this castle to Winchelsea."

Several large green sandstone catapult balls, 9 in. to 15 in. diameter, were found at the bottom of the well; some are in the garden of the cottage on the east side.

The chapel foundations, which were uncovered in 1852, were covered in again; it would have been much better had they been covered with slabs of stone, and been left exposed; there would not then have been such a discrepancy between the position of them as shown by the Ordnance plan and Mr. Figg's plan, which shows the chancel facing the east, and is more likely to be correct. Neither would any one have fallen into the error of making the nave 8 ft. or 9 ft. broad by 40 ft. long,—rather a queer proportion. The dimensions, as given by Mr. Lower, are,—nave 40 ft. by 16 ft. 8 in. wide; chancel, 12 ft. 8 in. by 11 ft. 6 in. wide; the general thickness of the foundations of the walls, 2 ft. 5 in. There were indications of an aisle having existed on the north side. The flooring, which had been removed, appears to have been laid upon a bed of shingle; a stone step to the chancel remained. The chancel was divided longitudinally into three, and below the floor were discovered several skeletons. Right and left of the chancel step stone enclosures existed, perhaps for the pulpit and desk.

The piscina, which is about the only thing to guide one as to the date of the chapel, is in the form of a capital; from the carving it may be very late Transitional or Early English, and of nearly the same date as the castle. It could scarcely have been a holy-water stoup, as it has a hole through it, and it was found at the east end of the nave, probably near its original position. When the chapel was burned, the slates of the roof falling on the font and piscina probably prevented their entire destruction.

In a small sketch-plan that I made of the north-west tower, there are shown seven bays round the lowest story, and seven vaulting ribs; I fail to see how there can be eight vaulting-ribs, unless two spring from one of the angles.

The oblong mural chambers, east of north-west tower and west of north tower, appear to have been for hourds to protect the base of the wall.

It is a pity that, when the excavations were carried out, there was not an effort made to discover the foundations of buildings in the inner ward, as we should then have known the correct position and size of the hall, &c. It appears that the only thing that led to the discovery of the chapel was the dried appearance of the grass. WILLIAM G. B. LEWIS.

VENTILATION OF THE COUNCIL-CHAMBER, GUILDHALL.

THE present Council Chamber at Guildhall will, in all probability, in a few years hence be superseded by a more commodious and architecturally-effective chamber than that in which the Common Councilmen of the City of London now hold their courts. Plans for a new chamber have already been prepared by the City Architect, Mr. Horace Jones, and the works connected with the substructure are in hand. Pending the erection of the new chamber, however, the City authorities have wisely sought to properly ventilate the old chamber, but, it would appear, they have sought in vain until recently, when they requested Messrs. Robert Boyle & Son, ventilating engineers, of London and Glasgow, to submit a scheme for the efficient ventilation of the chamber, which was accepted only on condition, as we understand, that unless the work when completed was approved of, — that is, unless it was completely successful, — it would not be paid for. Messrs. Boyle, confident in their power to succeed, set to work, with the result, as it would seem, of fully justifying their anticipations, and, what is more, of so fully satisfying the Corporation authorities that, after experiments and observations made since the completion of the work in January last, Messrs. Boyle have, on the certificate of the City Architect, been paid for their work.

We have had an opportunity of being present in the chamber during a meeting of the Common Council, and being aware, from personal experience, of the bad state of the atmosphere which used to prevail on court days, we are in a position to say that a marked improvement has been effected,—so decided a change for the better, in fact, that we can quite endorse the favourable opinion of it which has been given by Sir John Monckton, the town clerk, in a letter to Mr. Whichcord.

The application of the system may be briefly described as follows:—For the extraction of the vitiated air nine of Messrs. Boyle's patent self-acting air-pump ventilators are fixed on the top of iron shafts standing at various heights above the roof to clear the ventilators of obstructions. Four of these shafts, two at each end of the chamber, are 13 in. in diameter, branching off a little above the ceiling into two 10-in. pipes communicating with openings in the ceilings 2 ft. in diameter, connected by means of ornamental centre flowers. On the top of each of

these shafts is fixed a 2-ft. air-pump ventilator. At the east end of the chamber a shaft, 18 in. in diameter, penetrates through the roof, having a 30-in. ventilator on the top, and expanding at the bottom to 2 ft. 6 in. by 2 ft. 3 in., covering an opening of the same dimensions in the centre of the ceiling. At the west end of the chamber a large shaft, 2 ft. 6½ in. by 1 ft. 8½ in., is carried a considerable height to the top of an adjoining building, surmounted by a 3-ft. ventilator, and terminating over an opening in the ceiling. A shaft, 16 in. in diameter, connected with the large chandelier suspended from the lantern over the central dome of the chamber, is also run into this shaft, the ventilation of the body of the chamber being partially effected by this means. On the top of the outer casing of the lantern three 13-in. shafts are fixed at equal distances from each other, capped with 20-in. ventilators; these shafts communicate with openings in the under portions of the lantern by means of expanded iron hoppers, and complete the arrangements for the extraction of the vitiated air from the centre of the chamber. A portion of these shafts formed part of the old system of ventilation, and were previously ornamented with revolving cowls. For the supply of fresh air Messrs. Boyle, with certain alterations, have utilised the arrangements which existed, making them thoroughly efficient. On the south side of the chamber four vertical air-tubes or brackets are fixed against the wall, two 2 ft. by 2½ in. by 3 ft., the other two placed a little higher up in the wall, being 1 ft. 6 in. by 4 in. by 2 ft. These tubes communicate with holes cut through the walls, 2 ft. by 8 in., finished with cast-iron gratings. These air inlets are all fitted with Messrs. Boyle's patent heaters,—which are now so well known as to need no further description here,—for warming the supply of air to any temperature required as it passes into the building; the north wall is similarly treated to the south, with the exception of having an extra tube at the end where the Lord Mayor sits. At the public end of the chamber three inlet-tubes are fixed, one at each side and one in the centre, also fitted with the air-warming arrangement. An abundant supply of air is admitted through these tubes, and tests have shown that the air can be warmed in cold weather to a temperature of from 60 degrees to 120 degrees, thus preventing cold draughts. With respect to the extraction of the vitiated air, experiments have shown that the average extraction of air from the chamber was 500,000 cubic feet per hour, and that during the whole of the experiments no down-draughts were experienced.

STAFFORD WATER SUPPLY.

SIR,—Having been responsible for the report on the proposed water-supply from Cannock Chase, which has recently been under the consideration of the Stafford Town Council, I venture to offer a few remarks suggested by the letter of "Sanitary Engineer" (*Builder*, November 11th).

I think the fact of obtaining fresh analyses of the shallow well water, with which the town is now supplied, must be only regarded as an expedient deemed necessary by some to again show unbelievers the urgent necessity of a pure town's supply. Though the Cannock Chase scheme has again been shelved, I do not think the public spirit of the Corporation can yet be fairly impugned when I enumerate the following facts:—

1. All the water-mains have been purchased and a great many laid.

2. Three borings in the New Red Sandstone have been executed under the supervision of a London engineer, but without success.

3. A fourth boring has been executed on a site suggested by an eminent local engineer, but without success.

It may seem like "putting the cart before the horse" to lay mains before the water-supply is obtained, but at the time they were purchased the price of iron was extremely low, and the first bore-hole was progressing so favourably that geologists and others declared the water-bearing stratum was about to be tapped.

I may add, with regard to the Cannock Chase scheme, that seldom has a corporation in late years been placed in the favourable position of Stafford in obtaining a water-supply with the payment of so little for compensations. The water has been pronounced by the county analyst as "simply splendid," and like "a very good and soft spring water or a perfectly filtered brook water." It would flow into the town by gravitation, and no expensive engineering works would be necessary in collecting.

Sir F. Bramwell, Professor Green, and Mr. W. Dennis, M. Inst. C.E., who have been consulted by the Corporation, have strongly favoured this scheme, and it is to be regretted that in a district where suitable collecting-areas are being rapidly snatched up by the larger towns and water companies, the county town of Stafford should have again let an opportunity slip of providing a pure water-supply from so economical a source.

J. BRADDON MCCALLUM.

THE GREAT FIRE IN SYDNEY, AND THE COLONIAL COLLECTION OF PICTURES.

SIR,—There has been considerable anxiety about the Colonial Collection of Pictures, for which the New South Wales Government have at various times liberally voted moneys. I must confess that, at first, I shared in this anxiety, and more especially with respect to Madox Brown's great picture of Chaucer. I have since, however, been inclined to think that it was a collection of some 350 pictures got together for a temporary exhibition, that was consumed in the burning of the Garden Palace, and not the Colonial Collection. In this supposition I am supported by a letter just received from the office of the Agent-General for New South Wales by desire of Sir Saul Samuel, K.C.M.G.

W. CAVE THOMAS.

NEW RAILWAYS.

Bala and Festiniog.—The new line of railway constructed by the Great Western Company, from Bala to Festiniog, was opened for passenger traffic on the 1st inst. Leaving Bala, for the first twelve miles the railway follows the river Tryweryn, the scenery along the whole distance being wild and romantic. The first station is near Frongoch Farm, and will be called Frongoch, about three miles and a half from Bala; the next is Rhydyfen, eight miles and a half, near the half-way inn of that name between Bala and Festiniog. At the foot of the Arenig mountain, within a mile of Llyn Arenig, the lake whence Bala derives its water supply, and Llyn Tryweryn or Migneint mountain, the line skirts the latter, and, being the highest point of the railway, there is here a relief siding for the traffic. Soon after leaving Llyn Tryweryn, twelve miles from Bala, the viaduct over the the Lladron Brook is reached. This is a notable piece of engineering work, having nine arches of 36 ft. span and 104 ft. in height, and is the introduction along a high and steep elevation to the beautiful Vale of Cwm Prysor, passing Castell Prysor, the remains of a Roman fort, and approaching within three quarters of a mile to Trawsfynydd village, seventeen miles, where it makes a detour to the right. It passes the junction of the Festiniog and Meantwrog roads, where Meantwrog-road Station (twenty miles) is situate, with charming views of the surrounding hills over the Cynfael, not far from Hugh Llwyd's Pulpit and to the terminus of the Blaenau and Festiniog line, which has been purchased by the Great Western Company, and widened to the ordinary gauge. Rhydyfen station is at the foot of the Arenig, within a mile of Llyn Arenig. Mr. Dean was the contractor for the new line, which, in addition to opening up an attractive and hitherto little frequented route for tourists and visitors to this part of the Principality, will, it is expected, prove an important factor in the extension of the slate trade of the Festiniog district.

Shenfield to Southend.—The proposed *route* of the projected railway from Arnold's Wood, Shenfield, on the Great Eastern line of railway, *viâ* Billericay, Wickford, Rayleigh, and Rochford, to Southend-on-Sea, has been surveyed by Mr. Vincent Yardley and Mr. Chas. S. Morgan, from the office of Messrs. E. Wilson & Co., of Dean's-yard, Westminster, engineers to the Great Eastern Railway Company.

St. John's, Horselydown, the interior of which has been restored by Mr. Thomas Gregory, Station Works, Clapham Junction, under the direction of Mr. Blomfield, was opened on Friday, the 9th inst. New seats and stalls have been provided, the windows have been reglazed with cathedral glass, and the floors relaid with pitch-pine wood blocks.

CHURCH-BUILDING NEWS.

Somersham.—The Church of St. Mary, Somersham, near Ipswich, has just been restored. The church was probably built about 1350, in the reign of Edward III., but some of the existing windows, doorways, &c., are later. The building consists of a nave and chancel, with arch into the tower at the west end. The old gallery, which extended across this simply-moulded but well-proportioned archway, completely spoiling its proportion and greatly marring its effect, has been removed. A few of the large roof-timbers are still to be seen, and are of solid oak, some being moulded,—viz., the tie-beams and cornices, and these are probably of the date of about 1500 or 1600. These timbers had been coloured, but the colour has been carefully cleaned off and the work oiled. The old square high pews in the nave have been entirely cleared away and replaced by open pitch-pine benches of Early English detail. There is no chancel arch, but the floor of the chancel has been raised 4 in. above that of the centre aisle of the nave, with a wide Portland stone step extending across the church. The old choir steps were of oak, but of poor and unworthy design, and these have been replaced by oak stalls of Early English character. The whole of the carving of the choir-stalls has been carried out from full-sized drawings supplied by the architect. The old flooring in the chancel was of pamments. This has been replaced by Minton's tiles of black and red, with border, and some encaustic tiling has been placed inside the communion-rails. Extensive repairs have been executed to the exterior. The whole of the nave roof has been stripped and re-tiled, and the water-pipes and guttering re-adjusted, with proper drains from the pipes. The whole of the work has been carried out from the designs of Mr. E. F. Bisshopp, architect, Ipswich, and under his superintendence. The contractors are Messrs. J. B. & F. Bennett, of Ipswich. Messrs. Crisp & Smith did the painting and stencilling work, and Messrs. Groom & Son, of Ipswich, have executed the carving.

Oakford.—The parish church of St. Peter, at Oakford, Devon, has been re-opened, after being closed for some three months for the purpose of internal renovation. The building was all, except the tower, re-built so recently as 1838. In the ancient tower there are eight bells, and the church registers date from 1568. For some time it has been felt that the pews and other internal arrangements were hardly adapted for modern requirements, and so a clean sweep has been made of them, and Mr. Edward Ashworth, architect, Exeter, was commissioned to prepare the necessary plans and superintend the renovation. The general contractor for the work was Mr. James Wood, of Lurley, near Tiverton, who has reseated the entire church with open benches of pitch-pine. The pulpit, prayer-desk, credence, &c., are of wainscot oak, and the work of Mr. Harry Hems. The pulpit, which is a memorial one, bears upon one of its panels, in unobtrusive characters, the following legend:—"This pulpit was given in memory of Frederick Temple and Walter Hillyard, by their brothers, George Anson, Arthur, and Henry, 1882."

Barnstaple.—The work of restoration at the parish church of St. Peter's, Barnstaple, is proceeding. The new reredos is to be of Beer stone. Mr. John Oldred Scott, M.A., the architect for the restoration, has produced a particularly ornate design for this reredos, and the work has been entrusted to Mr. Harry Hems, of Exeter. Mr. Hems has also been commissioned by Mr. Scott to prepare from his designs some altar-rails and a sedilia for the sanctuary. They will be of English oak, and are to be profusely carved.

Swansea Baths and Laundry.—In this competition (advertised in the *Builder*), the directors of the Swansea Baths and Laundry Company have received fourteen sets of designs for the erection of Turkish and swimming-baths and steam laundry. The directors met on Thursday to inspect the plans, but we are not aware whether they have yet come to any decision. A premium of 25*l.* was offered for the design which should be chosen, and the design so honoured was to "thenceforth become the absolute property of the company," who were to be "at liberty to deal with it in any way they might think proper." No other premiums were offered.

STAINED GLASS.

Bicester.—A three-light window has just been erected in Bicester Parish Church to the memory of the late Rev. G. Bayldon Rogerson, M.A., formerly Tyrwhitt Hebrew Scholar and Seventeenth Wrangler, St. John's College, Cambridge. The artists are Messrs. Mayer & Co., who have already executed three other windows for the same church.

Islington.—The large west window of St. James's Church, Prebend-square, has recently been filled with painted glass, at the cost of Mr. T. W. Wing, a member of the court of assistants of the Clothworkers' Company, the trustees and patrons of the church, which is the foundation of William Lamb, citizen and clothworker. The upper part of it, which is a wheel window, in eight compartments, represents the six days' work of creation; in the five lower compartments are the figures of the following prophets, viz., Noah, Moses, Daniel, David, and Abraham, and under each figure is the illustration of an incident connected with his life. The accessory surroundings consist of canopy work, with angels bearing musical instruments, &c., in the shaftings. The whole is Venetian in tone of colour. The arms of the founder of the church and of the Clothworkers' Company are introduced, as are also, on a brass plate, those of the donor, with a suitable record of the gift. The work was designed and executed by Messrs. Lavers, Westlake, & Co., of Endell-street.

SCHOOL-BUILDING NEWS.

Ripon.—New Wesleyan schools here have been opened. The total cost of the new buildings has been about 1,000*l.* The contractors for the carrying out of the work were Messrs. Mitchell & Webster, builders, Ripon; Mr. Simpson, joiners' work; Mr. Baynes, slaters' work; Mr. Dalton, plumbers' work; and Messrs. Appleton & Son, stonework.

Dalston.—On the 14th ult. the late Lord Mayor (Sir J. Whittaker Ellis) laid the foundation-stone of new school and mission buildings for the parish of Holy Trinity, Dalston. The building, which, inclusive of fittings, will cost about 2,500*l.*, and will afford accommodation for 150 girls and 160 infants, has been designed by Mr. G. H. Jones, the builders being Messrs. J. Jarvis & Sons, Hackney-road. It will be in the Gothic style, brick-built, with stone dressings.

Miscellanea.

Convict Labour and Harbours of Refuge.—The committee appointed by the Home Secretary on the employment of convict labour, which was presided over by Sir Edmund Du Cane, has concluded its report, which states that there are in Great Britain about 10,000 able-bodied convicts, of whom only about 1,000 are available for public works, but a largely increased number will shortly become available. The committee enter at some length into the question of harbours of refuge, and suggest that convict labour might be utilised in the construction of such harbours at Dover, Filey, and Peterhead. The commission of 1859, over which Sir James Hope presided, recommended Peterhead Bay as a suitable place for a harbour of refuge, further suggesting that 300,000*l.* should be spent upon the work, 100,000*l.* of that amount to be subscribed in the locality; but this latter condition was at that time found to be impracticable, unless a second harbour should be provided on the east coast of Scotland. The proposal to select Peterhead will be met by representations of the claims of Stonehaven Bay, in favour of which Robert Stephenson, the eminent engineer, and an official committee, reported in 1812, and again in 1830, as a suitable mooring-ground for the North Sea fleet. The present convict committee, who have been conducting their investigations for several months, state that the labour of nearly 700 convicts would be at once available for the construction of a harbour of refuge on the Scotch coast.

Carlisle.—A new mission-hall, erected in connexion with the parish of St. Paul, on a site generously given by the Duke of Devonshire, was opened on Sunday evening by the Lord Bishop of the Diocese. Mr. George D. Oliver was the architect of the building.

Liverpool Science and Art Classes.—The prizes and certificates gained by the students of the Liverpool Science and Art Classes were distributed by Professor Abel, F.R.S., on the 20th ult. The chairman (Mr. James Samuelson), in introducing the Professor, said that in the technological examination of May last, which, if not the first, was one of the earliest examinations in connexion with the trades' guilds, he found that the total number of passes in the United Kingdom was 1,162. In this list he was sorry to say Liverpool cut a very poor figure; Bolton obtained the largest number of passes, 124, against 112 secured by London, 109 by Glasgow, 71 by Manchester, 63 by Bradford, 35 by Huddersfield, 20 by Liverpool, 11 by Birmingham, 9 by Hull, 1 by Bristol, and 15 by Ireland. Of the twenty Liverpool students who passed the examinations nine were connected with the Science and Art classes. What he desired to draw attention to was the fact that this system of tuition gave a remarkable impetus to the industries of the United Kingdom. In Bolton, for example, nearly all the students had passed in cotton manufactures; in Glasgow, chiefly in pattern designing and mechanical engineering; in Bradford, in weaving and pattern designing; in Huddersfield, nearly all in cloth; and in Ireland, in linen. Professor Abel said the system of instruction, of special inspection and testing, and acknowledgment and reward of success, which had been pursued throughout the country under the direction of the Government Department of Education, was certainly one of the greatest among the many benefits which they owed to the successful realisation of that grand conception of the wise and far-seeing Prince whose memory was so deservedly revered,—the conception of gathering together all nations under one roof, as represented by their several achievements in arts, manufactures, domestic economy, and applied science in its many ramifications.

Lerwick Town-hall.—The new town-hall at Lerwick, in Shetland, exhibits much gorgeousness in its enrichments. The building is rapidly approaching completion. It will be peculiarly rich in painted glass and stone carving. The cities of Hamburg and Amsterdam, mindful of their long commercial association with Shetland, have each given a painted window, adorned with their arms and bearing appropriate inscriptions. The heraldic lions of Norway,—it will be remembered that Shetland was an ancient Norse possession,—and of Scotland are plentifully distributed; while in the great hall there will be a series of four windows of two lights each, constituting a complete historical sequence of the various princes, earls, and other noble personages formerly connected with the island.

South Stockton.—At a meeting of the South Stockton Local Board, on the 7th inst., it appeared from the minutes of the Finance Committee that the District Surveyor (Mr. S. E. Thorrold) had applied for an increase of salary in consideration of the important work of paving and sewering which he is about to carry out under the instructions of the Board. Having fully discussed the question, the committee recommended the Board to increase Mr. Thorrold's salary from 200*l.* to 300*l.* per annum from the 1st of January next, the Surveyor undertaking to continue in the employ of the Board for at least four years. The Board adopted the recommendation of the committee.

The Discoveries at Poitiers.—Further particulars have been received regarding the important archæological discoveries at Poitiers. They consist of a temple, 114 mètres long, and whose façade measures 70 mètres; a thermal establishment covering two hectares, with the piscina, canals, paving, &c.; a theatre, with a stage of the depth of 90 mètres; and, finally, several entire streets of houses. The whole occupies an area of about seven hectares,—about seventeen acres. Some of the buildings contain beautiful sculptures, attributed to the second century, and numerous objects of iron, bronze, and earth.

TENDERS

For new building for the Bury and West Suffolk Club, Bury St. Edmunds:—

Robinson, Bury	£2,880 0 0
Grimwood & Sons, Sudbury	2,695 0 0
Saunders, Maldon	2,640 0 0

The work was offered to Messrs. Grimwood & Sons, but refused by them, the form of contract and conditions not being in accordance with those agreed upon by the Royal Institute of British Architects and the Central Association of Master Builders.

For Chatham-place Schools, Hackney, for the School Board for London. Mr. E. R. Robson, architect:—

Wood	£16,840 0 0
Higgs & Hill	15,890 0 0
Perry & Co.	14,773 0 0
Atherton & Latta	14,700 0 0
Sargeant	14,484 0 0
J. Grover	14,466 0 0
Scrivener & Co.	14,460 0 0
J. Jerrard	14,389 0 0
Stimpson & Co.	14,270 0 0
W. Shurmur	13,977 0 0
T. Boyce	13,900 0 0
C. Wall	13,730 0 0
C. Cox	13,622 0 0

For schools at Basnett-grove, Lambeth, for the School Board for London. Mr. E. R. Robson, architect:—

Chappell	£11,918 0 0
Shepherd	11,780 0 0
Marsland	11,765 0 0
Atherton & Latta	11,708 0 0
Hart	11,563 0 0
Outhwaite & Son	11,539 0 0
J. Oliver	11,448 0 0
Higgs & Hill	11,390 0 0
Lawrance	11,372 0 0
Nightingale	11,178 0 0
Stimpson	11,150 0 0
Cox	10,580 0 0

For new offices, Fenchurch Buildings, City. Messrs. Davis & Emanuel, architects, 2, Finsbury-circus. Quantities by Mr. H. P. Foster, 5, John-street, Adelphi:—

Scrivener & Co.	£10,542 0 0
Ashby & Horner	10,485 0 0
Colls & Sons	10,290 0 0
W. Brass	10,120 0 0
G. S. S. Williams & Son	9,943 0 0
E. Lawrance	9,932 0 0
H. & W. Carter	9,750 0 0
J. Grover	9,684 0 0
W. Bangs & Co.	9,683 0 0
E. Conder	9,628 0 0
J. Mowlem & Co. (accepted)	9,347 0 0

For house at Woodford. Quantities supplied:—

Hampton	£4,878 0 0
Egan	4,715 0 0
Wells	4,675 0 0
Hoskins	4,637 0 0
Robson	4,594 0 0
E. Good	4,543 0 0
W. Shurmur	4,248 0 0
Wontner Smith & Son	3,989 0 0

For ten cottages at Walthamstow. Messrs. Ward & Shiner, architects:—

Ansell	£2,345 0 0
Marsland	2,295 0 0
Hearle & Son	2,295 0 0
W. Shurmur	1,980 0 0
Good Bros.	1,900 0 0
Hughes	1,883 0 0

For new Congregational Church, Seven Sisters-road, Finsbury Park. Mr. Charles Henry Searle, architect, No. 12, Southwark-street. Quantities by the architect:—

Patman & Fotheringham	£10,650 0 0
Manley	10,259 0 0
Brass	9,830 0 0
Nightingale	9,679 0 0
Macey & Sons	9,612 0 0
Dove Bros.	9,565 0 0
Bywaters	9,494 0 0
Williams & Son	9,482 0 0
L. H. & R. Roberts	9,410 0 0
Harris & Wardrop	9,094 0 0
Woodward	8,931 0 0

For putting shop fronts and other works to five shops, Lavender-hill, Wandsworth. Mr. F. Boreham, architect:—

Atkinson	£2,203 0 0
Sawyer	2,100 0 0
Hogben	1,980 0 0
Holloway Bros.	1,643 0 0
J. Holloway (accepted)	1,475 0 0
Kerry (withdrawn)	1,407 7 6

For new shop front and other works, Victoria Dock-road. Mr. F. Boreham, architect:—

Gregar	£665 0 0
Sawyer	542 0 0
Morter	527 0 0
Shurmur	522 0 0
Johnson	489 0 0
Roberts Bros. (accepted)	442 0 0

For plumbing and sanitary work at new hall and offices for the Operative Bricklayers' Society, Southwark Bridge-road. Messrs. A. & C. Harston, architects:—

J. Knight, Westminster (accepted)	£221 0 0

For the erection of an amphitheatre and buildings in connexion therewith, in High-street, Ramsgate, for Mr. George Sanger. Mr. Albert Latham, C.E., architect, Margate:—

First Section.

	Ancaster Stone.	Bath Stone.
Bushett, Margate	£6,645 0 0	£6,605 0 0
Fish & Co., London	6,388 0 0	—
Hutchinson, London	6,300 0 0	6,150 0 0
Adcock, Dover	5,756 0 0	5,638 0 0
Shrubsole, Faversham	5,689 0 0	—
Home, Ramsgate	5,680 0 0	5,450 0 0
Frostick, Westgate	5,630 0 0	5,590 0 0
Paramor & Son, Margate	5,590 0 0	5,532 0 0
Martin, Ramsgate	5,496 0 0	5,316 0 0
Smith & Son, Ramsgate	5,440 0 0	5,210 0 0
Denne Bros., Deal*	4,943 0 0	4,800 0 0

* Accepted.

For Curtiss Hotel, Felixstowe:—

Thwaites	£3,800 0 0
Kemrey	3,750 0 0
Coe	3,425 0 0
H. B. Smith	3,400 0 0
Saunders & Son	3,333 0 0
G. Grimwood & Sons	3,248 0 0
R. S. Smith	3,097 17 0

For building house and business premises at Heavitree, near Exeter, for Mr. M. Sewell. Mr. Charles Pinn, architect. Quantities supplied:—

Moass & Sons	£754	0	0
Gibbard	706	0	0
Kenshole	675	2	0
Stile	637	0	0
Stephens & Son	593	0	0
Pratt	563	15	0
Holmes (accepted)	553	0	0

For Primitive Methodist Chapel, Old Lenton, Notts. Mr. John Wills, architect:—

Wheatley & Maule	£2,043	0	0
Geo. Hewitt	1,730	0	0
Marshall Bros.	1,618	0	0
R. Dennis	1,600	0	0
H. & W. Butler	1,582	0	0
Munks	1,575	0	0
Attwell & Savage (accepted)	1,550	0	0

For erecting two shops, surgery, and houses in High-street, Southend-on-Sea. Messrs. Ough & Natusch, architects, London and Southend. Quantities supplied:—

Wm. Wood	£2,267	0	0
J. Grover	2,136	0	0
F. E. Woodhams	2,043	0	0
Baker & Wiseman	1,967	7	5
J. W. Steward, Southend	1,927	15	8

For kerbing, paving, and reconstructing Grange-road and Eaton-rise, Ealing, Middlesex, for the Ealing Local Board. Mr. Charles Jones, C.E., surveyor:—

Gibson	£2,833	0	0
Seward	2,363	0	0
Adamson	2,273	0	0
Strachan	2,215	0	0
Nowell & Robson	2,124	0	0
Pizzey	2,090	0	0
Watkins	2,006	0	0
Finnegan (accepted)	1,842	0	0
Baxter (withdrawn)	1,627	0	0

For rebuilding Freeman's Arms Hotel, Aylestone-road, Leicester. Mr. J. Bird, architect:—

Hutchinson & Son	£1,729	10	0
N. Elliott	1,716	0	0
T. & H. Herbert	1,698	10	0
Sharp & Son	1,679	0	0
Geo. Hewett	1,675	0	0
Clark & Garrud	1,669	0	0
T. Duxberry & Son	1,579	0	0
J. Jewsbury	1,493	0	0
C. Bass (accepted)	1,490	0	0
H. M. Hewitt	1,489	0	0
T. Johnson	1,439	0	0
Chas. Wright	1,400	0	0
O. Wright	1,336	0	0

For alterations and repairs at the Duke's Arms, Stangate-street, Lambeth, for Mr. Wright. Mr. W. E. Williams, architect. Quantities not supplied:—

Marr	£789	0	0
Langridge & Son	698	0	0
Staines & Sons (accepted)	676	0	0

For the erection of a mission-hall, with class-room, club-room, and offices, Hammersmith. Mr. Hugh Roumieu Gough, architect, 6, Queen Anne's-gate:—

J. Norris	£2,920	0	0
Adamson & Sons	2,770	0	0
Adams & Son	2,706	0	0
Chamberlain Bros.	2,699	0	0
Belham & Co.	2,550	0	0
G. Sharpe	2,492	0	0
J. Lister	2,435	0	0

For laundry fittings and kitchen apparatus at the Joint Counties Lunatic Asylum, Abergavenny. Messrs. John Giles & Gough, architects. Quantities by Mr. C. H. Goode:—

Adams & Son	£2,985	0	0
Berry & Sons	2,871	0	0
Bradford & Co.	2,689	10	0
J. & F. May (accepted)	2,650	10	0
Two Boilers and Fittings.			
J. & F. May (accepted)	£870	0	0

For building a lodge at Hampstead, for Mr. A. Davis:—

Jones & Branch (accepted).

For alterations to the Yorkshire Grey Public-house, Whitechapel, exclusive of pewterers' work. Messrs. Wilson, Son, & Aldwinckle, architects, 2, East India-avenue, Leadenhall-street. Quantities supplied:—

Shurmur (accepted)	£1,782	0	0

For recovering flats over aisles of St. Leonard's Church, Colchester, with 7 lb. lead. Messrs. Ebbetts & Cobb, architects, Savoy House, 115, Strand:—

Rogers	£290	0	0
J. G. Johnson	275	0	0
Mills & Son	240	0	0
J. H. Johnson (accepted)	230	0	0

For the erection of factory, &c., in Lower Ford-street, Coventry, for Mr. G. Townend. Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry:—

H. Gardner, Coventry	£820	0	0
C. Haywood, jun., Coventry	755	0	0
J. Worwood, Coventry	748	0	0
J. Brown, Coventry	745	0	0
R. Wootton, Coventry	695	0	0
T. Mayo, Coventry	628	0	0
C. Garlick, Coventry (accepted)	590	0	0

For new front to No. 12, Marlborough-place, Brighton. Mr. Arthur Loader, architect, Brighton:—

J. Barnes	£207	0	0
G. T. Garrett	205	0	0
H. Parsons, Brighton (accepted)	202	10	0

For the erection of school-room, offices, &c., at Offley-road, Brixton, for Mr. George Morrish. Mr. Edward C. Pressland, architect:—

Windsor	£709	6	0
Harding	705	0	0
G. & S. Fisher	659	0	0

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